Motor Age

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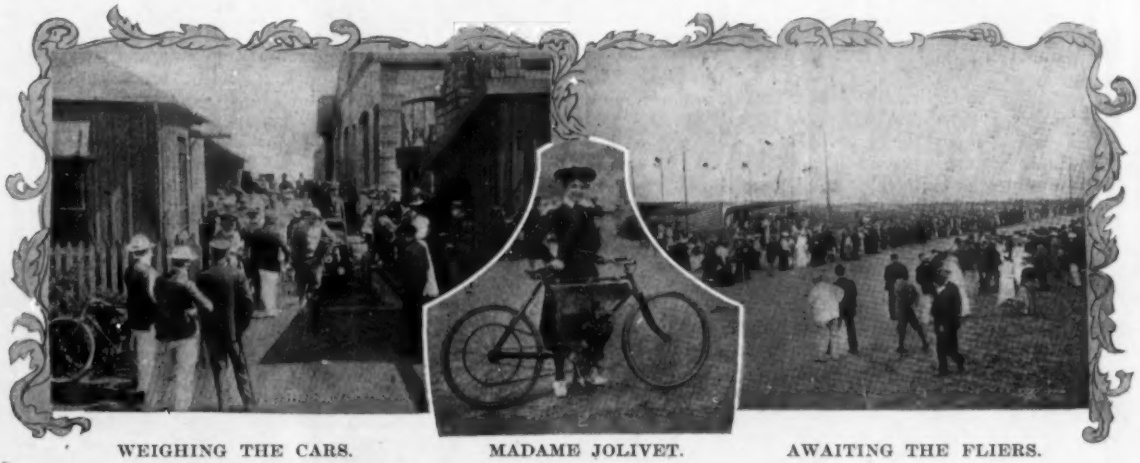
Motor Age

WITH WHICH IS INCORPORATED CYCLE AGE

VOL. II. NO. 12. CHICAGO, SEPTEMBER 18, 1902. $2.00 PER YEAR

EIGHTY FIVE MILES AN HOUR ON FRENCH ROADS.



WEIGHING THE CARS. MADAME JOLIVET. AWAITING THE FLIERS.

That Gabriel and others had established marvelous records at Deauville has already been told by the cable. The meeting was promoted by the Auto Velo, the famous French automobile and cycling journal. The course was not absolutely straight and it was said that record breaking upon it was out of the question. Nevertheless several makers had prepared special cars.

The course has a total length of 1¼ miles. Traffic was, of course, entirely suspended. The road is lined on one side by a range of low hills, which furnished comfortable room for many thousands of spectators. There is a very slight bend at about two-thirds of the distance and the surface was far from perfect. The competitors were given only 600 yards in which to get up full speed. Aside from these drawbacks, however, the arrangements were perfect, the mayor having taken an active part in the arrangements and rendered valuable service. The police, marines, soldiers and customs officials were all pressed into service to keep order, but there is nothing to indicate that, had such an accident occurred as that at Staten Island, the results would have been less disastrous.

The first trials were those of the motor cycles, which were divided into two classes, weight alone being taken into consideration. There were nine entries in the light class and fourteen in the heavy. The best time in each was made by Barre. In the light class, with a 2-horsepower Bruneau, his time was 49 3-5s. In the heavy class, with a 5-horsepower machine of the same make, it was 43 1-5s. The former is propelled by a single cylinder motor, carried in place of the bottom bracket by forked tubes, and the latter by a two-cylinder motor of V shape, the drive in each case being direct from the crank shaft to the rear wheel by chain.

The machines were required to start without being pushed. Some of them were a long way over the line before the motors could be started, and this accounts for the slow times of some of them. The speed of the tricycles was wonderful and Rigal, with his 8-horsepower Buchet, showed 77.62 miles an hour, beating the time made over the same course last year by nearly 10 seconds. Rigal could not start his motor, however, and so was pushed off, contrary to rule. That fact, however, does not alter the fact as to his performance. It simply illustrates the folly of combering record trials with unnecessary restrictions.

Osmont, on his 8-horsepower De Dion tricycle, says the Autocar, from which many of these details are gathered, covered the kilom. in 33 4-5s., which is also the time of Demester on his big Demester-Lamberjack machine. A Clement voiturette had a somewhat narrow escape through the inevitable dog and the animal, as well as the car, were only saved from destruction by the driver swerving around at top speed at great risk to himself. Both Clements ran well and were only beaten by Rigal on a new Buchet, whose time was 41s.,

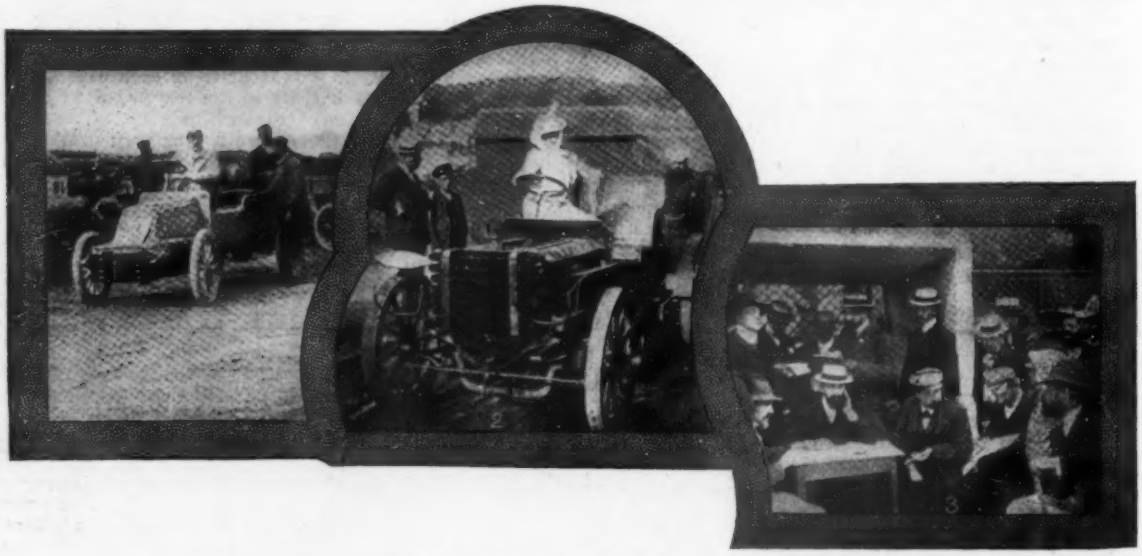
or 54½ miles an hour, which is 2 2-5s. better than the record time at Deauville last year. The Thellier-Passy cars performed well, and a 4½ h. p. Locomobile got well within the minute. After the two-seated voiturettes it was the turn of the four-seated cars, and as the Clement passed there was nothing to show that the tonneau was occupied except for the occasional bobbing up of a head. The passengers were crouching down at the bottom. The Darracq had just a couple of light seats for passengers, who got shelter behind the men in front. The light carriages made a brave show; Rigolly on his Gobron-Brillie was beaten by a Decauville driven by Thery, and by the Serpollet of Rutishauser, the former doing the kilometer in 30 1-5s., or at the rate of 74 miles an hour. Baras was believed to have beaten these times on a Darracq, but as he stopped on a first attempt and, returning, started again under another number, it is almost certain that he will be disqualified. The first six light carriages beat the record made by Rigolly at Vienna in 34 3-5s., and probably never before had the records received such a shaking.

But something better was to come. When it came to the turn of the big cars interest got very high, and as the bugle sounded the start of each vehicle every one strained forward to see Serpollet come round the bend. No one doubted that the Whale would do something sensational. First the Mors flew down the course, one driven by Gabriel and another by Levegh, the old professional driver, who for a year past has had to stand aloof from the sport through illness, and each car as it passed gave an idea of some light substance blown along by a hurricane. All sense of weight was lost in these vehicles, which bounded along with their wheels constantly leaving the road, as if they were as light as air. And then it was announced that Gabriel had done 26 2-5s., which is equal to 84.67 miles an hour, and M. Paul Chauchard on his Panhard narrowly missed a dead heat, for he only took one-fifth of a second more. The performance was a stupendous one. Nothing like it had ever been done on the road, and it may be doubted even whether there is any authenticated instance of its being done on the rail, or if such speeds have been attained by locomotives on the level, their superiority will soon be lost when automobiles get to the 150 kilometers, which it is fully believed they will do before long. It was hoped even that M. Serpollet would reach this figure. When he flew over the line he certainly seemed in a fair way of doing it, and during the first half of the distance his speed seemed to be higher than that of any other vehicle. On coming round the bend he slowed down, and then it was seen that the bottom of his burners had broken loose and was banging on the ground. Serpollet could be no more disappointed than the spectators, but he has not lost hope, and has fixed his mind on covering the kilometer at the rate of 95 miles an hour, and after what was seen at Deauville no one doubts that he will do it.

And now that the meeting is over some of the makers themselves are beginning to marvel at the performances of the cars. They think that the records have been broken with too great a facility, but, after all, this may be sufficiently explained by the excellent conditions under which the tests were held. In any event, the times will not be officially accepted until a remeasurement of the track and an examination of the time sheets place their accuracy beyond all doubt, but in the meantime there can be little question that the cars have fairly done what they are credited with.

Following is a list of the times made by the leading machines in each class:

HEAVY CARS, TWO SEATS.	M.	S.
Gabriel, 60 horsepower Mors	26	2-5
Chauchard, 70 horsepower Panhard-Levassor	26	3-5
Le Blon, 12 horsepower Serpollet	27	1-5
Levegh, Mors	28	
Marquis de la Ferte-Mun, Mors	31	
HEAVY CARS, FOUR SEATS.		
Pannecake, 70 horsepower Panhard-Levassor	28	4-5
Charley, 40 horsepower Mercedes	34	
LIGHT CARS, 1,430 POUNDS AND LESS, TWO SEATS.		
Thery, 20 horsepower Decauville	30	1-5
Rutishauser, 12 horsepower Serpollet	31	1-5
Rigolly, Gobron-Brillie	32	4-5
Barbaroux, Clement	33	3-5
Edmond, Darracq	34	1-5
Rigolly, Gobron-Brillie	35	2-5
LIGHT CARS, 1,430 POUNDS AND LESS, FOUR SEATS.		
Millot, 16 horsepower Pengeot	39	1-5
Tart, 20 horsepower Clement	40	
Ravenez, Decauville	41	2-5
Henriot, Deckert	47	1-5
Gaste, 12 horsepower Automotrice	58	3-5
De Clesles, Thellier-Passy	1:12	1-5
VOITURETTES, 550 TO 880 POUNDS, TWO SEATS.		
Rigal, 12 horsepower Buchet	41	
Vonlatum, 10 horsepower Clement	42	
Oury, 10 horsepower Clement	32	2-5



16-HORSE CLEMENT. MADAME BOB WALTER. MEMBERS OF THE AUTO-VELO STAFF.

VOITURETTES, 550 TO 880 POUNDS, FOUR SEATS.

Houry, 10 horsepower Clement	45 1-5
De Clesles, Passy-Thellier	48
Hemery, Darracq	49

MOTOR TRICYCLES.

Rigal, 8 horsepower Buchet	28 4-5
Osmont, 8 horsepower De Dion	33 4 5
Demester, Demester-Lamberjack	33 4-5

MOTOR BICYCLES, LESS THAN 66 POUNDS.

Barre, 2 horsepower Bruneau et Cie	49 3-5
Derny, Clement	1:05 2-5
Muller, Clement	1:05 2-5

MOTOR BICYCLES, 66 TO 88 POUNDS.

Barre, 5 horsepower Bruneau et Cie	43 1-5
Lamberjack, Lamberjack-Demester	44
Labitte, Werner	47 2-5
Derny, 2½ horsepower Clement	47 3-5

The illustrations were reproduced from that excellent English journal, Motoring Illustrated.

CHICAGO CLUB'S RACES AT JOLIET.

The committee in charge of the Chicago Automobile Club's race meeting, which occurs at Joliet on September 27, have been practically assured of the attendance of Alexander Winton, as a competitor in the principal events and as an exhibiter of the now famous Bullet in trials against the watch. Mr. Winton competes at Providence on the 23rd, but will send his machines west by express. The Chicago club will, if Mr. Winton, or other speedy operators desire it, arrange to continue the trials on Monday, September 29.

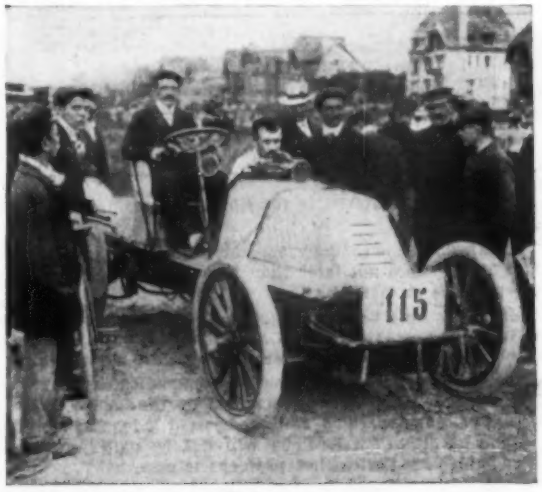
The prizes for the events are exclusively silver cups and as fine a selection has been purchased as has ever been offered in this country. They are now on exhibition at the club house. Mr. Croninger, chairman of the committee, is at Cleveland, in the interest of the meeting and two members will attend the Detroit events to secure entries. An invitation race for ladies has been added to the formal list of events, which is as follows:

1. One mile steam, stock machines only.
2. One mile electric, open to all.
3. Five mile steam, open.
4. Five mile gasoline, class 0.35 to 0.50.
5. Five mile motor bicycle handicap.
6. Ten mile gasoline, class 0.50 to 0.70.
7. Ten mile gasoline, class 0.70 to 1.00.
8. Twenty-five mile open, all makes, all weights, all classes.
9. Pursuit race, class 0.35 to 0.50, time limit 30 minutes.
10. Five mile handicap, 1 mile limit.
11. Private race, members C. A. C.
12. Ladies' race—invitation.

The class races are open to vehicles whose power, as rated by the makers, is a certain percentage of a horsepower to 100 pounds of weight. A table of powers and weights appears on the entry blank, and is practically the same as that which appeared in MOTOR AGE of September 4, except that the manufacturers' rating, instead of theoretical horsepower, will be accepted. Flying starts will be the order in all events except the handicaps and the pursuit race. The attendance from Chicago will be large and Joliet will be full to overflowing during the week. Requests for reservation of accommodations will receive attention if addressed to W. C. Crolius, Joliet, Ill.

Gathering Information About the Roads.

New York, Sept. 14.—The excellent road information scheme referred to in MOTOR AGE last week has been started by the Automobile Club of America. It has great possibilities of imitation and extension throughout the country. The members have received a request to furnish the secretary with road information as to roads in their neighborhood and crossed by them in towns in accordance with sample cards enclosed of towns from New York and from Hudson, N. Y., to the Berkshire Hills, compiled by Cortlandt Bishop and Mr. Shattuck. The cards are of heavy cardboard, about 3 by 8 inches, and convenient to carry in the inside coat pocket. The information is presented compactly and briefly. It consists of the distance between the towns,



Gabriel and his Mors.

which are named in order, and the total distance together with such brief road instructions as may be necessary to prevent the tourist from going astray. The best hotels and convenient garages are also noted.

New York-Boston Entries.

The secretary of the Automobile Club of America has issued the following list of entries, received up to Saturday last, for the New York-Boston and return run of October 9 to 15:

NO.	CLASS.	NAME.	ENTERED BY.
C 1	Gasoline	Packard	Harlan W. Whipple.
C 2	"	"	Henry B. Joy.
C 3	"	"	Adams-McMurtry Co.
C 4	"	"	Adams-McMurtry Co.
B 5	Steam	Prescott	Lrescott Auto Mfg. Co.
B 6	"	Foster	Foster Auto Mfg. Co.
B 7	"	Lane	Lane Motor Vehicle Co.
B 8	"	Lane	Lane Motor Vehicle Co.
C 9	Gasoline	Robinson	Pope-Robinson Co.
B 10	"	Haynes-Apperson	Haynes-Apperson Co.
B 11	"	" "	Haynes-Apperson Co.
B 12	"	" "	Haynes-Apperson Co.
B 13	"	Autocar	Autocar Co.
B 14	"	"	Autocar Co.
B 15	"	Knickerbocker	Ward, Leonard Electric Co.
B 16	"	"	Ward, Leonard Electric Co.
C 17	"	Apperson	Apperson Bros., Auto Co.
C 18	"	Brazier	H. Bartol Brazier.
A 19	"	Torbensen	Torbensen Gear, Inc.
A 20	"	Pierce	Geo. N. Pierce Co.
B 21	"	Darracq	Harold H. Brown.
B 22	Steam	Foster	Foster Auto Mfg. Co.
B 23	Gasoline	Adams-McMurtry	Adams-McMurtry Co.
B 24	Steam	White	P. H. Deming.
B 25	"	"	Winsor T. White.
B 26	"	"	White Sewing Machine Co.
B 27	"	"	White Sewing Machine Co.
B 28	"	"	White Sewing Machine Co.
C 29	Gasoline	Locomobile	A. L. Riker.
A 30	Steam	"	Locomobile Co. of America
A 31	"	"	Locomobile Co. of America
C 32	"	"	S. T. Davis, Jr.
B 33	"	Grout	Grout Bros.
B 34	Gasoline	Stevens	J. Stevens Arms & Tool Co.
B 35	"	"	J. Stevens Arms & Tool Co.
B 36	"	Rambler	Thos. B. Jeffery & Co.
B 37	"	Elmore	Elmore Mfg Co.
B 38	"	"	"
B 39	"	De Dion	K. A. Skinner
C 40	"	Oldsmobile	H. B. Shattuck & Son
B 41	"	Autocar	"
B 42	"	Searchmont	"
B 43	"	Oldsmobile	"

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The editor will be glad to receive communications for publication. They must be accompanied by the names and addresses of senders, which will not be used if request be made to that effect. Contributions will not be paid for unless accompanied by notice that payment is expected.

Subscription, Two Dollars a Year, - Six Months, One Dollar

STANDARDIZATION OF PARTS.

Standardization in no matter what way applied, means a reduction in price. When the automobile maker shall have found it possible to buy of a specialist certain parts of standard pattern he will be enabled to save money in the construction of his vehicle. The saving will be shared with his customer. A certain class of buyers will be willing, always, to buy a tailor-made automobile and to pay twice as much as would be necessary for some other machine of equal capacity. But the public, the people, on whom the majority of makers depend, are seeking the best obtainable for their money. Hence, standardization is, to them, and to the makers who cater to them, of importance. This is especially true in connection with vehicles for commercial use.

A few weeks ago MOTOR AGE was fortunate enough to hit upon a suggestion for the standardization of tires which impressed the executive committee of the manufacturers' association so favorably that they have undertaken the work necessary to secure its adoption. At the same time, it appears the tire makers themselves were at work on a plan of standardization in another direction, and of great interest to users of vehicles for public service or other commercial purposes.

One of the most prolific sources of troubles in connection with the use of solid tires has been the fact that alone manufacturers of tires, carriage and wagon builders, have been accustomed to use different standards of channel sections. The result has been hundreds of improperly fitting tires, poor service, and in many cases loosening of the tires through the angle of the tire being greater than that of the channel, the tire beds itself eventually, where it should have been in the first place, and the result is a loose tire. In many cases the wheels, when new, are equipped with one make of tire and channel, and when tire renewal is necessary, another make is applied. All this is to be overcome. To the B. F. Goodrich Co. belongs the credit. The American Steel Hoop Co. is making the necessary rolls for producing new standard sizes of channels, and they are expected to be ready shortly. The B. F. Goodrich Co., Consolidated Rubber Tire Co., Diamond Rubber Co., Hartford Rubber Works Co., Victor Rubber Co., Kokomo Rubber Co., Gutta Percha and Rubber Mfg. Co. of Toronto, India Ruber Co. and Pennsylvania Rubber Co. have agreed to adopt this standard. One large concern engaged in the manufacture of structural shapes, makes two different shaped tire channels and nine sizes of each, to say nothing of eight or nine special sections.

Standardization, thus commenced in connection with heavy carriages, will prove one of the great questions for consideration by makers of automobiles of all classes. As the industry ages specialists will increase so that, as the maker becomes aware of the reliability of their product, the necessity of making many parts will disappear.

INCREASE OF AUTOMOBILE SPEED.

Just how rapidly has the speed of automobiles increased in France is shown by the figures supplied in the races since they became practical vehicles. In the Paris-Bordeaux-Paris race of 1895 Levassor accomplished an average of 15½ miles an hour on a 4-horsepower Panhard, a feat which was regarded as astonishing. Indeed, it was in view of such an achievement in a race that foreign legislators thought they were rather generous when, in their act legalizing motor cars, they fixed the minimum speed at 14 miles an hour.

In 1896, in the Paris-Marseilles-Paris race, Mayade on a 6-horsepower Panhard achieved 16 miles an hour. These two were races of upward of 750 miles, so that the test was severe; and, owing to the varying length of the contests from which the subsequent figures are gathered, it is not easy to make a true comparison, as the distances range from 62 miles (100 kilometers) up to the 329 miles of the Paris-Bordeaux of 1901. Jamin on a 4-horsepower Bollee accomplished 29 miles an hour from Paris to Trouville in 1897.

The next year showed no breaking of the record, but in 1899 Lamaitre, driving a 20-horsepower Peugeot, achieved 32 miles an hour in the Pau-Bayonne-Pau race. Later in the same year Levegh, in the Bordeaux-Biarritz race, made a notable advance, scoring an average of 41 miles an hour on a 20-horsepower Mors.

The year 1900 raised the figures several times. At Pau, Rene de Knyff, on a 16-horsepower Panhard, averaged 44 miles an hour; Jenatzy, in a 100 kilometers race, did 48½ miles in 60 minutes, and Levegh, on a Mors, in the Bordeaux-Periguex contest, was the first to average 50 miles an hour.

In 1901 Fournier's pace in the Paris-Bordeaux race was 52½ miles an hour, on a 60-horsepower Mors, and on the second day of the Paris-Berlin race of last year Antony, on a Mors, reached 54 miles an hour.

During the past season Rene de Knyff has accomplished 55½ miles an hour on a 70-horsepower Panhard on the first day of the Paris-Vienna, while in the first 100 kilometers of the Circuit des Ardennes Baron de Crawhez, on a 70-horsepower Panhard, covered 60½ miles in 60 minutes. Thus in 8 years the average speed of motor cars over a long distance has increased from 15½ to 60½ miles an hour.

AS SHOWN BY THE CENSUS.

The bulletin report of the census bureau statisticians contains this year, for the first time, a chapter devoted to motor vehicles. Of such vehicles, it seems, 4,192 were constructed in the United States during the census year 1900, and their aggregate value, as reported by 109 manufacturers, was $4,899,443, an average of $1,168 to a vehicle.

"As but few of the establishments manufacturing

motor vehicles were devoted exclusively to this work," the report continues, "and as, in many cases, their operations covered only a portion of the census year, or were not continuous during that period, it is impracticable to give any statistics relating to the industry beyond the quantity and value of the product."

The specialization in the manufacture of parts, a well known feature of the automobile industry, and the consequent rather anomalous situation that most manufacturers do little more than assemble are noted. "Bicycle factories figure largely in the industry, and a considerable number of automobiles was constructed by carriage builders. A great many machine shops each built from one to half a dozen motor vehicles, mostly, however, in an experimental way."

The tabulated figures for the year 1900 show that Connecticut led. Here is the division by states:

	MANUFACTURERS.	NUMBER.	VALUE
California	4	6	$ 9,350
Connecticut	4	911	1,899,592
Illinois	6	671	758,777
Indiana	4	55	61,915
Maine	3	13	13,100
Maryland	3	25	55,500
Massachusetts	17	1,198	789,892
Missouri	3	28	29,600
New Jersey	8	248	452,655
New York	21	624	471,547
Ohio	8	188	240,600
Pennsylvania	13	74	73,450
Wisconsin	6	124	30,900
Others	9	27	12,565
Total	109	4,192	$4,899,443

A comparison of the relative popularity of the three motive powers, indicates that conditions two years ago were not as they are today. Gasolene undoubtedly leads in the total output of the three different classes of motor vehicles at present, but in 1900 it was a very poor third. The total value of the electric vehicles turned out in that year exceeded the combined total values of the other two, was three times as great as the total value of the gasolene output and almost twice that of the steam vehicles, although the number of steam vehicles manufactured was greater. There were 1,575 electric vehicles in all, worth $2,873,464; 1,681 steam vehicles, at $1,147,927; and 936 gasolene vehicles, at $878,052. It is probable that one factory has turned out gasolene runabouts exceeding the total of 1900 during the past year.

"Notwithstanding the large number of motor vehicles constructed during the census year," the report concludes, after a description of the various types of boilers and motors, "the industry was only in the experimental stage, and its development promises to be as remarkable as the expansion of the bicycle industry. Few industries involving such a degree of mechanical skill and ingenuity, and presenting so many new problems for solution, have developed so rapidly, both in ideas and in commercial results."

There is a Buffalo physician, living in Franklin street, who does not like autos. This may be because he hasn't one. However, he maintains that the auto has a morally degenerating effect upon physicians. "An auto makes a —— liar out of the doctor who owns one," said he with proper emphasis. "Every physician whom I know who has an auto says they are the greatest things on earth and that they never have any trouble with them. I saw one of them the other day who had been extolling the virtues of horselessness to me. I saw him on a road near the city line, and he was lying on his back in the dust under his machine, pulling and hauling with a wrench on some parts of the inwards of the thing and cussing pretty well for a man of his standing. I had my horse, and I must say I took a certain satisfaction in observing the mechanical ingenuity the doctor had developed. He didn't see me, and I heartlessly drove on. I saw him that night and asked him if his snorting-machine still moved along pleasantly, and without interruption or appendicitis or something and he eyed me calmly and said he had never had the slightest trouble with it and advised me again to get one."

* * *

The New York Mail and Express displayed its faith in the importance of automobiling, devoting three pages to it in its issue of last Saturday. The reading matter was interesting and valuable and came largely from the pens of those prominent officially in various branches of the sport and industry. The special edition was entirely the work of its automobile editor, Alfred Reeves, than whom none has become more deservedly well known and popular in the motor world.

* * *

The board of commissioners of the District of Columbia have notified the committee in charge of the G. A. R. encampment that the proposed automobile race on one of the principal streets cannot be permitted.

* * *

Agitation has been begun by the American Motor League in favor of a state law compelling cities and townships in this state to mark their boundaries by sign boards with the speed limit set by the local ordinances plainly set forth thereon. It is argued that such a law would not only be just to the automobile tourist but would aid the various districts in enforcing their local speed restrictions. As it is a speed law digest and a state map alone can keep a tourist within the legal rate.

* * *

A party of Chicagoans, consisting of Mr. and Mrs. John F. Palmer, Mr. and Mrs. C. H. Tucker, Dr. and Mrs. Drumbach, left Chicago on Wednesday of last week and toured by easy stages to Cleveland, there to attend the racing on Tuesday.

Our old friend, the horse, upon whose final exemption from oppression by the genus homo the most brilliant efforts of latter day genius are directed, has, if appearances may be trusted, scored another point toward his ultimate salvation or extinction, as the comic papers have it. It is entirely safe to say that within a few years he will have lost his usefulness as the motive power of the stage coach. He will be considerated obsolete, at least where the public highway permits the use of modern methods.

CHICAGO CLUB AT GRAND RAPIDS.

Splendidly Entertained by the Local Club—An Invasion of a Peach Orchard and Other Incidents.

A tired, dusty, happy crowd of Chicago Automobile Club men reached the city by one of the lake steamers on Monday morning, well learned in golf lore, familiar with every nook and cranny of Grand Rapids, enthusiastic over the hospitality extended them by the members of the Grand Rapids club and absolutely redolent of peach orchards. They had burned up the road where no watchful guardian of the peace was near to see; they had engaged in every form of devilment to which the lover of outdoor life is addicted; they had visited and been made much of, dirt, grease and all, by the business, golf and country clubs of Grand Rapids and now were returned to tell of events calculated to arouse the envy of their fellow members who were not of the party.

An invitation to visit Grand Rapids and become the guests of its club had been extended by President Charles B. Judd. Arrangements were made to cross the lake Friday night, land the machines early Saturday morning at Holland and proceed leisurely over the 32 miles of road to the destination, there to be met and escorted into town by the local club. Unfortunately, it became necessary to curtail the number of machines somewhat, the boat's accommodations being taxed to the limit. The party was composed of President F. C. Donald, Mr. and Mrs. Frank X. Mudd, Senator R. B. Fort, Dr. S. C. Green, D. W. Webster, B. M. Young, R. H. Croninger, W. H. Hoopes, H. F. Hoopes, Howard Hoopes, W. W. Robinson, S. S. Chapin, A. D. Cella, Guy Howe, F. O. Tallman, R. C. Doer, Charles E. Bartley, W. R. Smith and S. A. Miles.

It was a rough night and the boat was small!

At Holland, Saturday morning, the party was met by L. M. Welch, one of the officers of the Grand Rapids club.

Rain fell so heavily and persistently as to upset the arrangements for the start, but all hands were on the road before 11 o'clock. The trip was without important incident, all the machines arriving in fairly good time, despite a hard struggle over the first 15 miles on account of rain. There had been no rain beyond that point, but dust took its place, so that the party, as it arrived at its destination, resembled a crowd of millers—and very floury ones, too. They were well cared for by President Judd, Walter C. Austin and others and from that moment the town and everything in it was theirs for the asking. After lunch a run around town to the points of interest wound up at the Kent County Club, a splendid house 3 or 4 miles from town and equally splendid golf links. On again, to the fair grounds, of which the club had taken possession in order that a few impromptu races might be held. The distinguished gentlemen who aspired to records and the plaudits of the multitude were Messrs. Austin, (Autocar); Donald, (Toledo); Mudd, (Winton); and Bartley, (Winton). No records or machines were broken. Back to the hotel to supper and thence to the Lakeside Club, where the party spent the evening, some dancing, some doing other things, but all tired and contented.

But the peach orchard! That came off Sunday morning. Think of twenty automobiles with fifty occupants turned loose in a Michigan peach orchard! It may be accepted as certain that some of the visitors haven't heard the last of the peach orchard yet. The experience was novel to many. Acre after acre of trees, loaded to the breaking point, it was one of those things which one "very often reads about, but very seldom sees."

Then back to the hotel. Here, for a few moments, the Chicagoans insisted on reversing things and becoming the hosts. A delightfully informal lunch ensued. The president of the Chicago club told the president of the Grand Rapids club how much he and his followers appreciated the kindness of himself and his followers; and the president of the Grand Rapids club insisted that the pleasure and the obligation was his and theirs; and the gentlemen toasted the ladies and the ladies returned the compliment; and everybody assured everybody else that never, in his or her life, had he or she known of a more pleasurable occasion or been made to feel more thoroughly the effects of good fellowship, than on this particular automobile outing.

Then amid the "good byes" of a score of club men and 500 of the good people of Grand Rapids, the party turned homeward, accompanied by President and Mrs. Judd and half a dozen other ladies and gentlemen. No untoward event happened on the way to mar as successful an event as it would have been possible to conceive. There will be more such, for the Grand Rapids club men have promised to accept an invitation to Chicago some time next season, and when they come there will again be "something doing."

CHAIRMAN DEFENDS RELIABILITY RUN RULES.

New York, Sept. 14.—Winthrop E. Scarritt, chairman of the A. C. A. reliability run committee, has been interviewed in reference to the various friendly criticisms on the rules his committee has framed to govern the New York-Boston run. In reference to MOTOR AGE'S suggestion that the machines be classified according to horse power per hundred pounds weight, Mr. Scarritt thought that such a classification would be an excellent one where only a small number of vehicles are engaged.

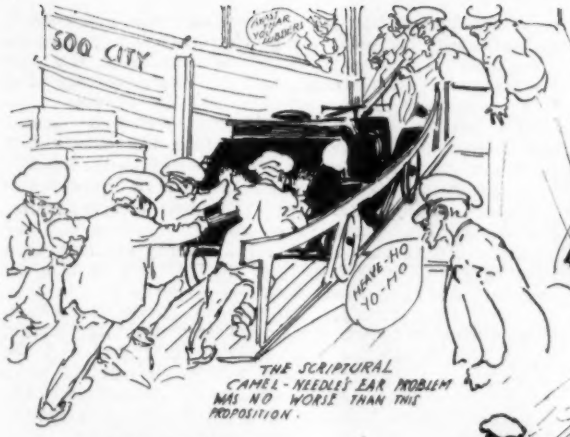
"The 500-mile reliability run, however, must not be taken as a professional contest," he said, "but rather as a contest of automobiles driven by their owners or manufacturers. It is to be like a big touring caravan. It is well known that the tendency of makers and of owners is to overrate the horse power of their machines. This was proven in our last run, when very few operators knew the power of their cars. To measure the cylinder and the stroke of the piston on every one of the one hundred or more cars that are expected would be too much for even the A. C. A. to handle. On the other hand, the weight of the cars can be ascertained with very little trouble, and consequently this plan has been adopted. The weight classification is still used in the French contests. Were this to be a speed contest, where nerve and great skill were required, the classification of machines by weight according to horsepower would be amirable, but this is to be a sort of a jog.

"Those who suggest a change of rules for the run lay great stress on the fact that no distinction is made between light and heavy carriages. A machine, no matter what its horsepower or its weight, that averages 15 miles an hour on the trip will receive a first-class certificate. It is argued by some that this gives an advantage to the heavy cars. To the minds of those who compose the A. C. A. committee the advantage seems to be on the other side to a certain extent.

"Any experienced motorist knows it is much easier for a 12-horsepower machine to maintain a 15-mile-an-hour pace than it is for a car of 40 horsepower; that speed is normal for the small car, whereas in the big car it is the very opposite. Several owners of heavy cars have declined to enter, because to keep their machines down to 8 or 15 miles an hour causes the engines to heat up, and usually brings about some trouble.

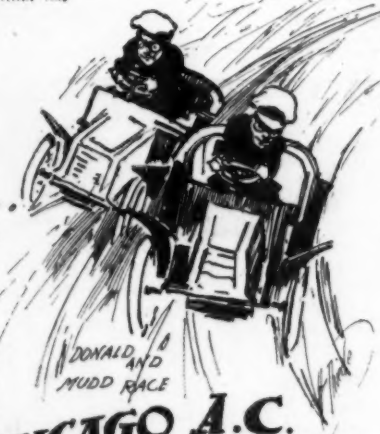
"On the other hand," continued Mr. Scarritt, "steep hills and sand are on the side of the high-powered cars.

CHICAGO A.C. AT GRAND RAPIDS



THE SCRIPTURAL CAMEL-NEEDLE'S EAR PROBLEM WAS NO WORSE THAN THIS PROPOSITION.

IT RAINED IN HOLLAND



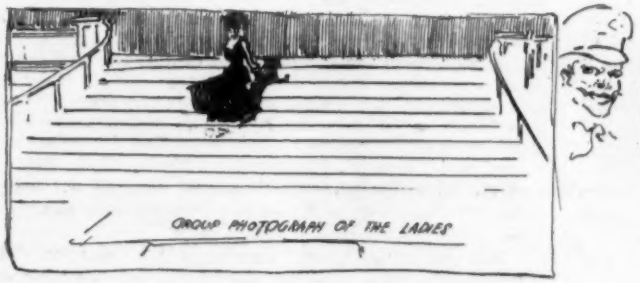
DONALD AND MUDD RACE

A "SLIGHT RISE" NEAR HOLLAND.

A CORPULENT OLD LADY, BEWILDERED AT THE SIGHT OF THE AUTOMOBILES TUMBLEY INTO A DITCH

RUMORS ARE ABROAD THAT THE MICHIGAN PEACH CROP IS NOT NEARLY SO IMMENSE AS HAD BEEN ANTICIPATED

ENTERTAINMENT IN THE DANCE HALL AND THE DUTCH ROOM AT THE LAKESIDE CLUB



GROUP PHOTOGRAPH OF THE LADIES

THE PRESIDENT OF THE LAKESIDE CLUB MADE AN ENORMOOS HIT WITH THE CHICAGOANS.

At the same time the rules adopted are considered the happy medium, and I think will prove satisfactory."

ENGLISH RELIABILITY TRIALS.

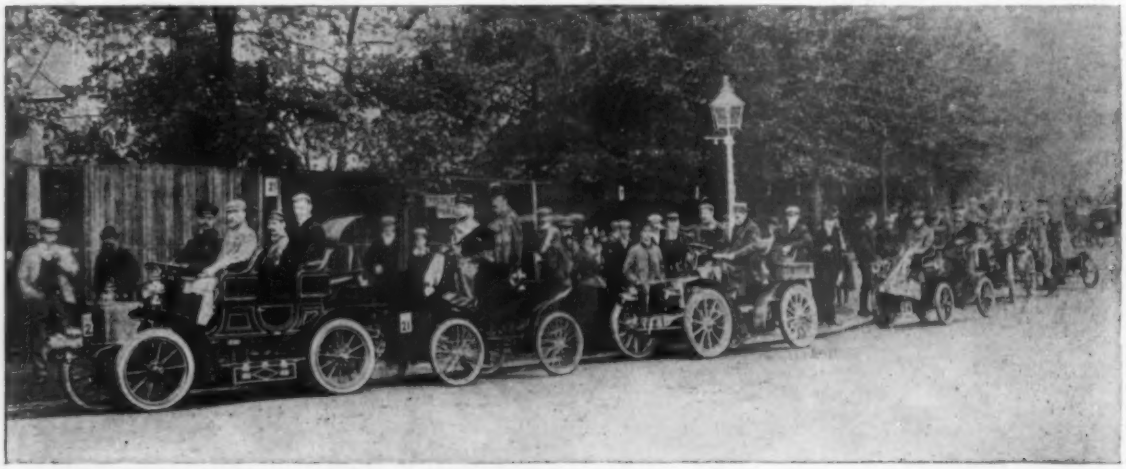
A series of reliability trials, promoted by the Automobile Club of Great Britain, in which the vehicles competing were required to make five separate journeys over different routes and submit to brake tests and trials of their hill climbing capacities, ended at the Crystal Palace, London, on Sept. 6. The daily journeys were as follows: Monday, Folkstone and return, 139½ miles; Tuesday, Eastbourne and return, 120 miles; Wednesday, Worthing and return, 120 miles; Thursday, Brighton and return, 87½ miles; Saturday, Bexhill and return, 121½ miles. Friday was given up to hill climbing and fuel consumption tests, the total journey for the day being 61½ miles and for the week 650 miles.

Under the rules the cars were required to report at the Crystal Palace grounds, for inspection and weighing, at noon on the Friday preceding the start. Of the 100 entries seventy were on hand at the prescribed time. Some of the remainder, among them a Duryea, came later but were not allowed to compete. On Saturday the officials satisfied themselves of the ability of the operators to properly control their machines by a series of brake tests on a hill with a rise of one in seven and one-half. First the combined power of the foot and hand brakes was tested and later each was tried separately. The result showed that in a large majority of cases the foot brakes were by far the more powerful.

Under the system of marking the maximum number of points obtainable each day was 300. The speed might be anything between 8 and 12 miles an hour. A speed of 15 miles an hour resulted in disqualification and the machine which accomplished 12 miles received no better award than the one which limited its speed to 8 miles. There was no penalization for tire troubles, but for stops for all other purposes one point was deducted for every minute of delay. Two hours was allowed each evening for repairing, cleaning and oiling. One point was deducted for every minute consumed beyond that time. The classification was by selling price alone, prices ranging from $750 to $6,000. Each vehicle was required to carry its full complement of passengers.

Seventy carriages started on the first day's journey and within the prescribed time limit all but two had returned. The start was made in a drizzling rain which made traveling most uncomfortable. The operators drew lots for positions at the start. A gentleman who reported the proceedings starting after the last car had left and passing, during the day, through the whole line, failed to see a single halt for repairs. The official reports were posted the next day and showed that among the perfect performances the White had scored, while two Locomobiles had scored 292 and 289 points. Other 100 per cent performers were three Wolseleys, a De Dion, Brush, Humber, two Daimlers, a Panhard and a number of others.

Next morning only three of the seventy starters were missing when the vehicles lined up for the trip to Eastbourne. At 7:30, sixty-seven cars, carrying 242 people, were on the road. The test was more severe than that of the first day, the hills being especially trying. Again three machines were missing at the end of the day, sixty-four having finished within the allotted time. One of the Whites again scored 300, another 296, and the Locomobiles 293 and 270. Wednesday, although the distance was 120 miles, less trouble was experienced than on the earlier days, for all of the machines had returned to the Crystal Palace by 7 o'clock in the evening. This was as far as the trials had proceeded up to the time of the dispatch of the latest British mail.



READY FOR THE BRITISH TRIALS.

Another Speed Road Contemplated.

New York, Sept. 15.—There was a story afloat in Brooklyn last week that a company had been incorporated to build a novel automobile speedway in Long Island. It has no reference whatever to the great Long Island speedway scheme of William C. Whitney, William K. Vanderbilt, Jr., and other members of the Automobile Club of America. The story has it that the new speedway will be 9 miles in length and that its location will be in the neighborhood of Jamaica and Rockaway Junction. There are to be two roads, each 100 feet wide, one for traffic and the other for speeding. The latter is to have banked turns and a corrugated steel surface to prevent skidding. The incorporators named are Titus W. Cramer, New York; G. C. Bryant and A. M. Ethwood, Brooklyn, and Samuel J. Reilly, Bath Beach. John A. Anderson, 26 Court street, Brooklyn, named as counsel, semes to know little or to care to say anything beyond the fact that some gentleman came to him and asked him to incorporate such a company.

RECORDS FALL AT CLEVELAND RACES.

Winton Lowers Track Record to 1 m. 4½ s.—White Steamer Also Scores.

Cleveland, Sept. 16.—The crowd which witnessed the first automobile race meet held in Cleveland, this afternoon, was one of the largest that ever gathered at famous old Glenville track. Five thousand people filled the big grandstand to its utmost capacity and fully as many lined the fences on both sides of the track, while a large number of people occupied the roof of the grandstand. The fact that the sport loving people of the Forest City were interested in the new game was evidenced by the fact that those present paid $1 each for admission, which is about the highest ever charged for outdoor sports. Had the figure been lower, it is probable that the crowd would have been half again as large. Needless to say the events were witnessed by the elite of Cleveland. Although some of the entrants were unable to be present the events were fully up to expectations and there were no disappointments in the stellar attractions which had been advertised. Winton with his famous "Bullet" did all that could have been expected of him by scattering existing world records right and left. The new Winton production which has been dubbed the "Pup" covered itself with glory and it is now probably the fastest machine in the country in the class for which it was designed; machines weighing under 2,000 pounds. Walter Baker gave an exhibition with the "Torpedo." The machine has changed its color and is now a porcelain white. It looked very much like a huge crab as it sped noiselessly around the big oval. A small window for the operator's eyes was the only opening and a facetious small boy back of the press echoed the general wonderment when he queried in a tone loud enough to be heard throughout half the grandstand: "Mamma, where is the man?" Mr. Baker made no attempt to develop the full speed of his wonder, because as had been previously explained in the newspapers, it was not thought safe to negotiate the turns at a high rate of speed. As an automobile show the meet surpassed anything that has ever been given in these parts. It is safe to say that nine-tenths of the automobiles owned in the vicinity of Cleveland were inside the grounds, as were the machines of a number of parties of tourists from Chicago, Buffalo and other places. No horse driven vehicles were allowed inside the oval and the fence was lined with automobile parties. Before the crowd had fully assembled the contestants came out to warm up and it was during these preliminaries that Winton made his fastest mile of 1:02, the best mile the track has ever seen and the fastest ever made by an automobile made in this country. The events were pulled off with surprising promptness in view of the fact that the majority of the officials were somewhat new at the automobile game, though nearly all of them were old bicycle race meet officials. Wm. E. Metzger of Detroit was referee; W. M. Perrett, Detroit, clerk of course; George Collister, starter, and W. A. Skinkle, scorer.

Event No. 1, a 5 mile race for gasoline vehicles weighing 1,000 pounds or over, brought out but three starters. Harry S. Moore in an Elmore won by a quarter of a mile with J. D. Dickson, superintendent of the Hansen Automobile Co., in a Cleveland, second, and George W. Bunham, superintendent of the American Motor Carriage Co., in an American, third. Time, 11:19½. Time by miles, 2:16¾, 4:40¾ 6:52½, 9:04¾, 11:19½.

Event No. 2. Five mile race for steam vehicles all weights. In this event L. E. Hoffman of the Hoffman Automobile Mfg. Co., took the lead and maintained it for a mile when something seemed to go wrong with the machine and it was passed by Rollin White of the White company with his new racer. The new White is a queer looking machine equipped with twin smokestacks back of the seat from which issued constantly a cloud of steam. The White won in the fast time of 9:53½. John McDonald in a Geneva was second in 11:12¾, and L. F. Hoffman with his Hoffman third in 12:01. Mr. Hoffman made the first mile in 1:43½.

Event No. 3. Five mile race for gasoline vehicles weighing 2,000 pounds or under. C. B. Shanks with the new Winton "Pup" and H. S. Harkness of New York with his new 40 horsepower Mercedes quickly jumped away from the other two starters in this event and for 2 miles there was as pretty a race as one would care to see. Shanks had perfect control of his little machine and held close to the pole while Harkness ran wide on the turns, losing and then gaining on the stretches. At two miles the New Yorker passed his competitor and then slowly but surely drew away, winning by a good margin. It was effort uselessly expended, however, because Harkness had entered his machine with the announcement that it had not been weighed and as soon as the event was completed, the car was run on scales and it was found the Mercedes was 215 pounds over the 2,000 pound limit, consequently the race was awarded to the "Pup." L. P. Moores of the Peerless company and Percy Owen of New York with a Winton touring car made an exciting race for second place, the latter winning by a nose. Shanks' time in this event was not taken. Harkness' time was 6:32¾.

Event No. 4 was a special exhibition by Rollin White with the new White racer. The latest production of this well known concern maintained a steady pace for 5 miles and at the close it was announced that it had broken all existing American records for steam vehicles as follows: One mile, 1:24 3-5; 2 miles, 2:44 1-5; 3 miles, 4:03 2-5; 4 miles, 5:24; 5 miles, 6:43.

Event No. 5. Three miles for electrics of all weights brought out five machines. W. M. Wright with a Waverley and Walter Baker with a Baker had an exciting race for something over a mile and then the latter drew away, winning in 5:54¾. Mr. Wright was second and A. B. Manley with a National was third. Baker's time by miles was, 2:08¾, 4:03 and 5:54¾.

Event No. 6 was an exhibition mile by J. H. Haitley on a gasoline tricycle. He tried for the record of 1:24 but failed to do better than 1:33.

Event No. 7. One mile exhibition by the Baker "Torpedo" in 2:07.

Event No. 8 was a 10 mile handicap open to winners and seconds in races No. 1, 2, 3, 4. The handicaps for this event were determined by the officials after the races had been run. Shanks with the Winton Pup started from scratch; Percy Owen, Winton, 1½ minutes; Rollin White, White, 2 minutes; W. M. Wright, Waverley, 4 minutes; H. S. Moore, Elmore, 5 minutes; J. D. Dickson, Cleveland, 6 minutes. Shanks and Rollin White put up a fine race for 8 miles, neither having a decided advantage until on the last mile a tire on the Pup exploded throwing Shanks out of the running. White finished in 14:59½, with Percy Owen with his Winton touring car, second.

Event No. 9. Winton went for a record trial with the Bullet but failed to do better than 1:04½. This eclipsed the old record of 1:06 2-5 made at Grosse Point, but was not up to the mark set earlier in the day in a preliminary try.

Event No. 10. The 10 mile open was in many respects the star attraction, although there were but three contestants. In this race Winton's Bullet plainly showed its superiority over the other machines present. The famous flyer not only won with ease but established new record for 10 miles and probably for several of the

shorter distances. The Peerless racer was lapped on the fifth mile and the Mercedes on the ninth mile.

	Times.	Miles.
1	1:20	1.20
2	2:23	1.03
3	3:25¾	1.02¾
4	4:28½	1.02¾
5	5:31½	1.02¾
6	6:34¼	1.03¾
7	7:38	1.03½
8	8:42	1.04
9	9:45½	1.03½
10	10:50	1.04¾

Previous record, 11:09.

Event No. 11. An Australian pursuit race brought out only two contestants, Alexander Winton and H. S. Harkness with the Mercedes. Of course it was almost a walkaway for the Bullet, which overtook the big red and green Mercedes in four and a half laps. The time was not taken but Winton negotiated one mile in the fast time of 1:02¼.

Event No. 12. The 10 mile handicap brought out all the fastest machines, among them Roy Rainey with a Panhard who did not compete in the other events. Starters and handicaps were as follows: Harkness, scratch; Shanks, 1:30; White, 2:30; Percy Owen, 3:30; L. P. Moores, 3:30; John Farson, Jr., 4:00; Paul Rainey, 4:30. Rainey maintained the lead until the seventh mile when he was passed by Percy Owen, who won. White held third place until the ninth mile when he passed Rainey and finished second. Rainey finished third, L. P. Moores fourth and Shanks fifth. Owen's time was 13:34. Harkness from scratch made the 10 miles in 11:12. Miles as follows: One mile, 1:20; two, 2:38; three, 3:48½; four, 5:00; five, 6:10½; six, 7:21½; seven, 8:32½; eight, 9:44; nine, 10:55½; ten, 11:12. During this event Winton turned his Bullet loose and fairly rode circles around the contestants.

Chicago Club to Entertain President Roosevelt.

The Chicago club, through president F. C. Donald, has undertaken the transportation arrangements for President Roosevelt and party during their stay in Chicago early next month. It is expected that fifteen automobiles will be required and these will be provided and operated by members of the club.

A. B. C. Secures Capital.

It is announced that the American Bicycle Co.'s reorganization committee will be ready with a report and recommendation in a few days—doubtless in time for the annual meeting in October. It would be a safe guess that there will be no opposition to the plan presented. Meanwhile such financial assistance as the company needs in the conduct of its business has been forthcoming.

Some of President Scarritt's Views.

New York, Sep. 12.—"We will resume the monthly meetings of the executive committee of the American Automobile Association next month," said President Scarritt to a MOTOR AGE man. "Owing to the absence of the members in the country and in Europe at was useless to attempt to get a quorum this summer. From my correspondence and what has been told me I think a large increase in the membership of the association is assured this autumn.

"This question of speed laws is one that we will have to tackle without delay. Ninety per cent of those who use automobiles keep them within reasonable speed restrictions and this large majority is made to suffer from the recklessness of the few. I am inclined to think that action against the vehicles themselves in the way of impounding them would be far more efficacious than fining offenders. Were a man to know that he would lose the use of his machine for a week or 2 weeks or a month, he would think twice before he would disregard the speed laws. I do not see why such a law would be unconstitutional. I am informed that this scheme has been tried in some parts of Italy with go results.

"We automobilists should insist on our rights but be equally as mindful of the rights of others. Satisfactory speed laws will have to come at our suggestions and the American Automobile Association with a membership drawn from different parts of the country should be able to suggest laws acceptable both to the fraternity and to the other users of the highways.

"When this question is taken up we should have an attendance of the directors from all our clubs. Our committees are now as complete as we desire them at present and we are ready for work in earnest."

In the Public Service.

JONESBORO, ARK.—The Jonesboro Automobile Co. has been organized and proposes to purchase three automobile coaches capable of carrying twelve passengers each and one freight coach. The plan of the company is to give a passenger service through Jonesboro every 20 or 30 minutes on all streets, and every 40 to 50 minutes between Jonesboro and Nettleton. The organizers of the company are S. A. Warner, Jr., W. W. Cate, A. L. Malone, L. W. Copeland, R. P. Robbins, N. F. Lamb, Rudy Copeland, F. J. Schmuck, Hardy Little and others. Mr. Copeland is chairman of the committee appointed to buy the automobiles. The capital of the company is $10,000.

WHITESTONE, L. I.—George Trapp, a resident of this place, is going to purchase two electric automobile stages and carry commuters between Whitestone and Long Island City for 10 cents each way. This is 35 cents cheaper than the railroad fare for the same distance. Mr. Trapp says for the present he will be satisfied with two stages, but very soon he will have a dozen on the road during the day. The residents of the community welcome the automobile stage route.

GLASSBORO, PA.—The official trial trip of the new automobile which will be operated between several Gloucester county towns has been made. The party, including the officers of the Mobile Transportation Co., who will operate the line; newspaper men and other invited guests. The officers expressed themselves pleased with the machine, which will seat about fifteen persons.

MONTPELIER, IND.—A company of Montpelier citizens are figuring on establishing an automobile line between Hartford City and Marion, possibly touching at Van Buren. Two conveyances of about eight passenger capacity will be purchased and as there is a large amount of travel between the two cities it is believed the venture would be a paying one from the start.

PARIS, FRANCE.—The automobile clubs census shows that 12,097 motor cars are now running in France on twenty-eight regular passenger auto lines and six lines transporting freight only.

Frederick Pearcall, having filled the tank of his steam machine and allowed some of the fluid to fall upon the floor, struck a match to light the burner and dropped a part of it while burning. The result was a fire, resulting in the destruction of two machines, not including that of the man who was careless enough to cause all the trouble.

At a recent meeting the Denver Automobile Club decided that it would not recognize motor cycles, though whether this refers to membership in the club or certain legislation which was under discussion was not stated.

Dr. Frank H. Davis and Dr. C. H. Bascombe, members of the Chicago club, arrived in Cleveland on the 9th. They went by way of Detroit, which they reached in 36 hours. They are now touring homeward.

Louis F. Roenitz and Dr. W. C. Davis, of the Chicago club, are touring Wisconsin in the former's Peerless. They left Chicago on the 10th and expect to travel about 1,000 miles before returning.

A number of cases of arrests of women for exceeding the legal speed limit have lately been reported. The latest is that of Mrs. L. H. Peterson, who has been fined $10 at Pittsfield, Mass.

DIAMOND CHAINS

Large and Hard Nickel Steel Rivets.

Great Tensile Strength and Accuracy

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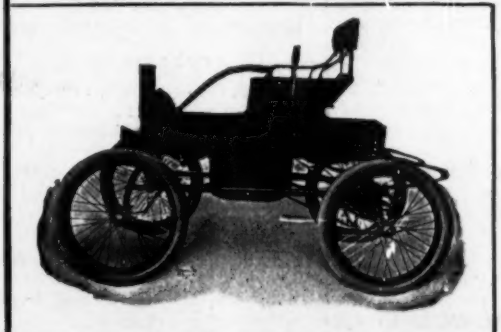
THE BAKER

IF IT'S A BAKER IT'S THE BEST

The Most Efficient of all Electric Vehicles



THE LIGHTEST WEIGHT
THE STRONGEST MADE
THE BEST FINISHED

We will send you a Catalogue, or we will write you. Address

The Baker Motor Vehicle Co.,
CLEVELAND, OHIO

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The long distance, and, above all, the great difficulties of bad mountain roads in Switzerland and Austria, the

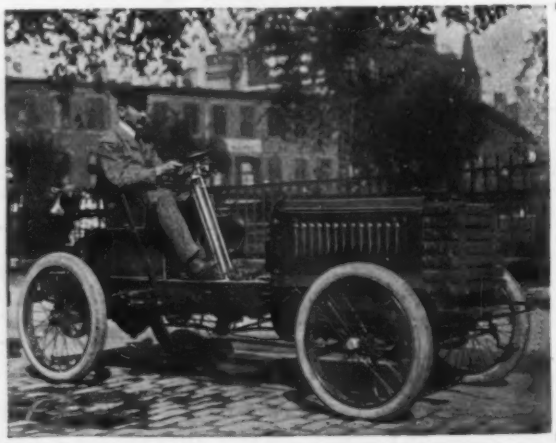
Light Darracq Vehicles

figured brilliantly in the Paris-Vienna Race

The Darracq Breaks all American Records

From 1 to 5 Miles

FOR LIGHT VEHICLES. AT THE RACES OF THE LONG ISLAND AUTOMOBILE CLUB, THE DARRACQ AGAIN PROVED A WINNER



Taking FIRST PLACES and establishing records as they usually do; but most noteworthy is the fact that in the General Classification the light Darracq vehicles are third and fifth.

Beating Twenty Heavy Racing Machines. . . .

Proving not only that the Darracqs are the fastest, but are also superior to the Mastodon Racers in Endurance, Reliability and Regularity.

IMMEDIATE DELIVERY.

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EDMOND, - - 16h., 12m., 30s.

THIRD
BARAS, - - - 17h., 17m., 52s.

FIFTH
HEMERY - 17h., 28m., 28⅗s.

SIXTH
MARCELIN, - 17h., 45m., 18s.

NINTH
COLLIN, - - 19h., 19m., 35⅘s

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The A. B. C. of the Gas and Gasoline Engine

CONTENTS OF PREVIOUS SECTIONS.

Section 1. Principle of gas and gasoline engines similar.—Introduction of two cycle engines.—First gas engines used.—Three types and their subdivision.—Requirements, gasoline or gas, mixture of air, and electric spark or hot tube.—Necessity and admission of air.—Principal parts.—Accessories.—Water jacket.—Two cycle engine—what it is.—Parts of two cycle engines and their operation.—Admission valve, inlet passage, igniter and exhaust port and their purposes.—Operation of two cycle motors.—How charge is taken.—Object and operation of baffle plate.

Section 2. Four-cycle engine.—Operation and principal parts.—Description of cylinder, valve chamber, ignition device, valves, piston, piston rings, wrist pin, connecting rod and valve stem.—Why valve chamber is used.—Purposes of the piston ring.—Auxiliary exhaust port.—Why water jacket is necessary.—Heat due to explosion.—Sight feed lubricator.—Position and functions of valve chamber.

Section 3. Uses of two-cycle motor and complete description of the operation of all its parts.—Starting the engine.—Methods and devices used in starting engines of all descriptions.

Section 4. A general description of two to one reduction gearing, with illustrations and explanations of four forms in common use.

Section 5. Various forms of valve-operating mechanisms.

Section 6. Description of centrifugal governors.

Section 7. Carbureters and mixing values.

Section 8. Ignition devices.

97—Ignition is one of the most important questions to be dealt with in connection with a gas engine. How the spark is caused at the exact moment required has been shown and it only remains to describe the various forms of spark plugs commonly used. It is not only essential that the spark occur at the right place, but that it shall not occur at a wrong place. The utmost care is necessary to prevent the wires of the battery coming in contact with each other, either by direct contact or through some other part of the engine. Hence, some device must be provided which while connected with the engine and carrying the battery wires, is insulated or, in other words, protected by some non-conducting material, else the electrical circuit would be constantly closed, so discharging the battery and preventing the occurrence of the spark. One of the devices which accomplishes this is known as the spark plug.

98—The most important form of ignition in use is that known as the jump spark. In this type no movable electrodes are used in the combustion chamber, the spark plug being used instead. It consists of a steel body, with a lower threaded portion to screw into a threaded opening in the combustion chamber of the engine. This body has porcelain, lava or mica insulation in its center, through which passes a small steel rod with a platinum point on the end which enters the combustion chamber. On the body of the plug another platinum point is attached, which is bent at right angles to the end of the body and is within about one thirty-second of an inch of the other point. One wire from the secondary winding of the induction coil is connected with the steel rod in the insulating bushing. The other wire from the coil is connected to some suitable point on the motor, and by means of the metallic contact between the steel body of the plug and the motor forms an electrical circuit for the non-insulated platinum point. The primary winding of the induction coil is connected with a make and break device located on the motor, of similar type to those shown in figures 36 and 37. The action of breaking the primary circuit by means of the make and break device causes a spark to jump between the platinum points of the spark plug. One of the principal difficulties with this form of ignition is the extreme liability of the insulating tube to break, from the excessive heat, when made of porcelain or lava. Another difficulty is the almost impossible question of properly insulating the secondary wires, on account of the extremely high voltage or tension of the induced secondary current. A

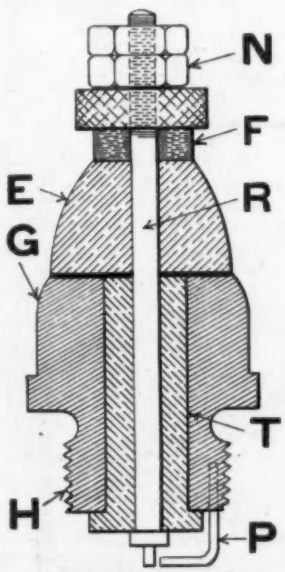


Fig. 41.

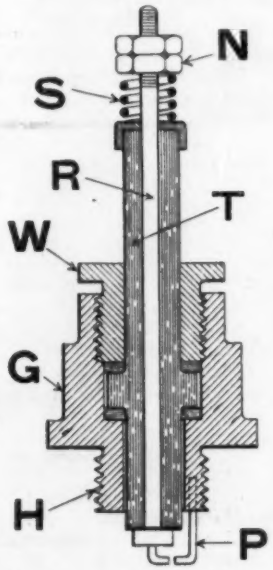


Fig. 42.

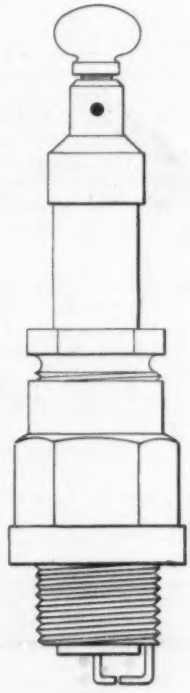


Fig. 43.

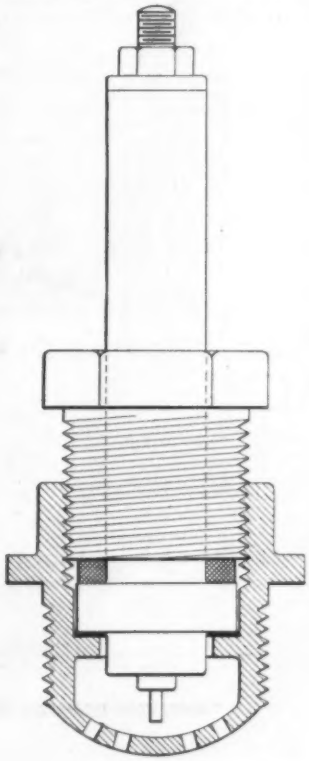


Fig. 44.

good deal of knowledge is required to properly construct and insulate this form of ignition mechanism, and in the hands of an inexperienced person it is liable to give trouble.

99—Figure 41 shows a jump spark plug of European make. The plug proper and the insulating bushings are in section to more clearly show the construction. The plug body G is made from hexagon steel of suitable size. The lower portion of the plug body is threaded as shown at H, so as to enable the plug to be screwed into the combustion chamber of the engine. A steel rod R, having a platinum point at its lower end, passes through the lava or porcelain insulating tube or bushing T, which is located in the plug body as shown. Another insulating piece E, shaped as shown in the drawing, is on the top of the plug body G, and the rod R passes up through this piece also. On the upper and threaded end of the rod R is a washer of asbestos, micanite or vulcabeston, to form a gas tight joint. It is held in place by means of the knurled thumb nut shown immediately below the lock nuts N, to which one of the wires from the secondary winding of the coil is attached. The platinum point P, in the lower and threaded end of the plug body as shown, forms the other connection from the secondary, and completes the electrical circuit through the other wire, which is grounded upon some part of the engine.

Fig. 45.

100—Figure 42 is another form of spark plug, but of American make, and also shown in section. The insulating tube T has a flange or shoulder near its lower end, which goes into the plug body G, with suitable packing above and below the shoulder as shown. The tube T is held in place in the plug body by means of the hexagon bushing W. The rod R has its upper end threaded, with lock nuts N and spring S directly below the lock nuts and around the rod R, for the purpose of allowing for any variation in length of the tube T from expansion or contraction due to differences in temperature. The threaded part H of the plug body has a platinum point P, which in connection with the one on the lower end of the rod R, completes the secondary circuit, in the same manner as in figure 41.

101—Figure 43 shows an outside view of a spark plug, somewhat similar in construction to that shown in figure 42, with the exception that the spring and lock nuts are omitted and a small thumb nut used instead as shown. Figure 44 is a form of spark plug, for which two special advantages are claimed. The plug body is shown in section, to more clearly illustrate these points. Only one platinum point is used and that on the lower end of the rod located in the insulating tube or bushing. The lower end of the plug body is of closed section, so as to form a chamber around the platinum point. In the end or convex portion of this chamber a number of small holes are drilled as shown, to allow a portion of the compressed charge to enter. In operation the arc or spark takes place between the platinum point and the inner surface of the chamber, igniting the mixture within the chamber and consequently the charge in the combustion chamber by means of a number of small jets of flame which emerge from the small openings in the convex end of the plug body. This device is also said to keep the platinum point free from soot or grease on account of the scavenging action of the burning gases within the chamber.

102—Figure 45 shows a densimeter for testing the specific gravity of liquid fuels. This is an exceedingly inexpensive and simple device, and one which no user of a gasoline engine should be without. It consists of a glass tube or vial as shown and an instrument which in general appearance looks somewhat like a thermometer. The gasoline to be tested is placed in the vial and the densimeter inserted. The grade of the gasoline can be ascertained by a glance at the figures on the upper portion of the stem of the densimeter. Extremes of temperature will cause a variation in the reading of this instrument, but there is now on the market an improved type which indicates the temperature also and furnishes an absolutely reliable gauge.

103.—Figure 46 shows a form of magneto-generator which is in general use, either with or without some form of battery, for producing the necessary electric current to operate either a primary or secondary form of spark coil. The battery is used for starting the engine. When the generator attains its normal speed to produce the spark the battery is cut out, automatically in most cases. The armature of this generator is of what is known as the Siemen's H type, and makes a simple and efficient one for the work required. The generator may be driven with a friction pulley, as shown, or by means of a belt from the flywheel or other suitable ro-

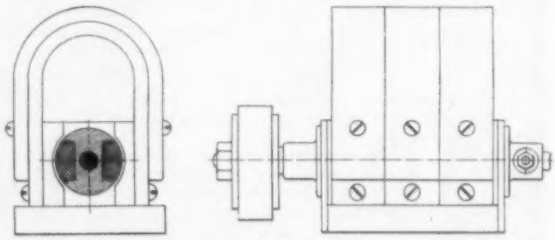


Fig. 46.

tative part. Instead of electro-magnets permanent magnets are used to produce the necessary magnetism in the pole pieces of this type of generator; hence its name.

The A. B. C. series is at an end. That many have profited thereby is shown by many communications on the subject. If, however, any reader has failed to understand some detail, or if any information desired has been omitted, MOTOR AGE will be pleased, if notified, to cover it in subsequent issues.

Relative Strength of Frames.

Milwaukee, Wis.—Editor MOTOR AGE: Can you inform me where I can get information as to the relative strength of the different shapes used in the construction of the top frames of automobile running gears? I have been referred to several books on the strength and properties of structural shapes, but they are beyond my limited capacity.—B. H. R.

Tables giving the carrying capacity for the sections of standard shapes, generally used for this purpose, will be given in MOTOR AGE next week.

Single or Double Cylinder Engine?

Buffalo, N. Y.—Editor MOTOR AGE: I am contemplating building a gasoline motor for an automobile, but am undecided as whether to use a two cylinder motor 3½x4½, or a single cylinder motor, 5x6. Which would give the better results and the greater horsepower?—W. A. S.

With a piston speed of 600 feet per minute the two-cylinder motor would develop about 5¾ horsepower and would have a speed of 665 revolutions per minute. The single cylinder motor would, with the same piston speed, give 5¾ horsepower, and have a speed of 500 revolutions per minute. If simplicity of construction is desired the single cylinder motor is to be preferred.

IMPORTANT MILWAUKEE MATERIAL SALE

We have purchased all the material left on hand at the time of the failure of the **Milwaukee Automobile Co.**, and the prices quoted below apply only where parts are wanted in lots of 25 or more of a kind. **Smaller orders will be filled, but only at an advance of 50 per cent in price.**

All parts are forged unless otherwise specified, the only cast parts being the front spring blocks, brackets for carrying side steering fittings and by-pass lever set, steps and hubs, all of these, however, being cast steel.

Almost every fitting is machined, that is, bored, faced and drilled ready for pinning and brazing.

Lugs are bored for 1¼ inch main frame tubes.

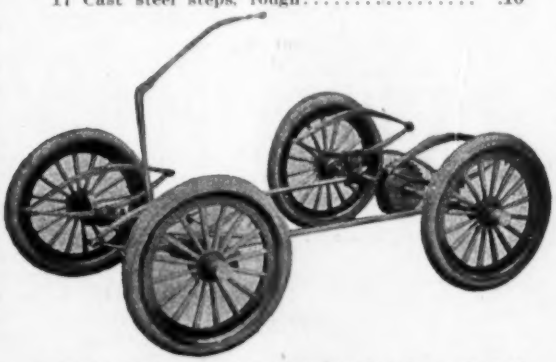
There is not a piece of cheap material in the lot, all of it being of the best in every particular, each and every piece being a bargain considering its quality.

The differential gears offer splendid value, they being bored for 1¼ inch shaft, some fitted with 30-tooth sprockets for 1x⅝ block chain.

We refer to Our Catalogue No. 1, page 19, where reference numbers are given, many of the fittings being the same while others are quite similar in design.

We will be pleased to ship samples upon receipt of small order prices. No rebates allowed on such orders should a quantity be taken at a later date.

		Each.
332	Straining rod yokes (similar to No. 21 Our Cat.), some rough, some machined.	$ .20
708	Rear axle ends (same as No. 1 Our Cat.), bored for tubing and machined for cup..	.50
149	Engine sprocket blanks, bored and turned ready for milling, 5-16 thick and for 12 and 14 teeth	.05
898	Machined front axle ends (No. 2 Our Cat.)	.55
378	Lugs for side steering fittings (similar to No. 37 Our Cat.), but heavier. Machined and bored	.05
25	Half rear axles, machined and threaded for cones, etc., 1¼ inch diameter	.50
1304	Axle end lugs, R. & L., for axle each side of differential (similar to No. 3 Our Cat.), but with projecting lugs to take diagonal braces like Nos. 39 and 49 Our Cat. Machined	.30
80	Steering knuckles, ¾ inch in the rough (forged), similar to No. 17 but smaller.	.50
905	Rear axle spring blocks, bored and drilled.	.30
260	Front spring (single) blocks (cast steel), bored	.10
129	Large sprocket blanks, bored 8 1-16 inch and turned, ¾ and 5-16 thick	.15
35	Nickeled center and side steering posts in fairly good condition	.50
28	Nickeled center steering handles, bent	.50
6	Nickeled connecting rods between knuckles and center lever	.10
14	Sheet metal mud guards, not enameled (rears)	.50
14	Sheet metal mud guards, not enameled (fronts)	.60
4	Patent leather mud guards (rears)	.75
16	Patent leather mud guards (fronts)	.80
21	Patent leather dashes	.75
774	Reach brace clips, machined for 1¼-inch tube only (similar to No. 18 and 9 Our Cat.)	.07
301	Steering lever forgings broached (square hole) and drilled, similar to No. 22 Our Cat. except that hole is square	.25
17	Cast steel steps, rough	.10



		Each.
168	Pinions for bevel differential gears.	$ .25
50	Cut gears to fit above pinions for side gears of differentials, forged	1.00
27	Foot break levers, nickeled with bed plate, bots and nuts	.50
254	Machined forgings for carrying steering post-socket, similar to No. 6 Our Cat.	.10
108	Foot break levers, unmachined (forged)	.10
237	Forged levers for connecting throttle operating shaft to throttle, similar to No. 24 Our Cat., except that the end is like No. 8	.07
155	Small forgings, rough, similar to No. 37 Our Cat.	.02
116	Forged L levers, bored, long arm 3 in., short arm 1 in.	.02
146	Forged, rough, steering rod ends, similar to No. 37	.02
94	Top brackets, rough cast steel, for side steering fittings	.10
100	Lower brackets, rough cast steel, for side steering fittings	.10
664	Reach end T, forged, bored	.10
118	Forged reach end lugs, machined, for arch on rear axle, left side, from the rear, with lug for small diagonal brace	.15
157	Same as above, machined, some rights and some lefts	.15
57	Same as above in the rough	.10
62	Large forged levers for throttle or reverse, partially machined	.15
27	Small forged levers for throttle or reverse partially machined	.15
98	Cast steel hubs, in the rough	.20
37	Front hubs, machined and drilled, some nickeled	.50
50	Rear hubs, machined and drilled, some nickeled, all key-seated	.50
166	Cast steel bearing lugs for mounting by-pass lever, throttle and reverse mechanism in body. Rough	.05
32	Forged braces or yokes to go round differential (similar to No. 19 Our Cat.); these rest on axle ends next to differential, said axle ends forming a brace plate to which yoke is bolted. Drilled	.60
237	Small forked forgings, rough (similar to No. 8 Our Cat.)	.05
48	Steering rod ends, like No. 37 Our Cat.	.02
82	Steering rod ends, female ends to match above, like No. 8 Our Cat.	.02
281	Similar to No. 24 but shorter, with slotted end, partially machined	.08
68	Same as above, machined	.10
48	Same as above but with longer arm, male end, partially machined	.08
31	Blank cast caps for wire wheel hubs, rough.	.01
100	¼ brass tees	.04
50	⅛ brass crosses	.08
500	Pin valve, wood handle	.01
80	Bevel differential gears complete, less sprockets for 1¼ shaft	7.00
25	Bevel differential gears complete with 30 tooth sprocket for 1x5-16 block chain, new	8.50
	Slightly used	6.00

TERMS: Cash with order, or half cash, balance C. O. D., or sight draft with bill of lading attached. **Remittances must be made either P. M. O. or Chicago or New York Exchange.** Orders accompanied by checks will not be filled until checks have been passed through the banks and exchange charges paid. We have eight Brecht (3,500 lb. capacity) running gears, like illustration, that we are making remarkably low prices on. Send for circular.

THE P. J. DASEY CO., 19 AND 21 LA SALLE ST., CHICAGO, ILL., U. S. A.

EVER TRY TO REPAIR A TIRE WITHOUT A JACK?

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THE B. B. JACK

CAN BE CARRIED IN ANY TOOL BOX AND APPLIED INSTANTLY. LIGHT IN WEIGHT AND WILL LIFT ANYTHING FROM A TABLE TO A TROLLEY CAR. :: :: :: :: ::

BRAY MANUFACTURING CO.

CHICAGO OFFICE:
56 FIFTH AVENUE

Factory: NEWARK, N. J.

Midgley Tubular Steel Wheels.

Artillery Pattern.

When in the market write the

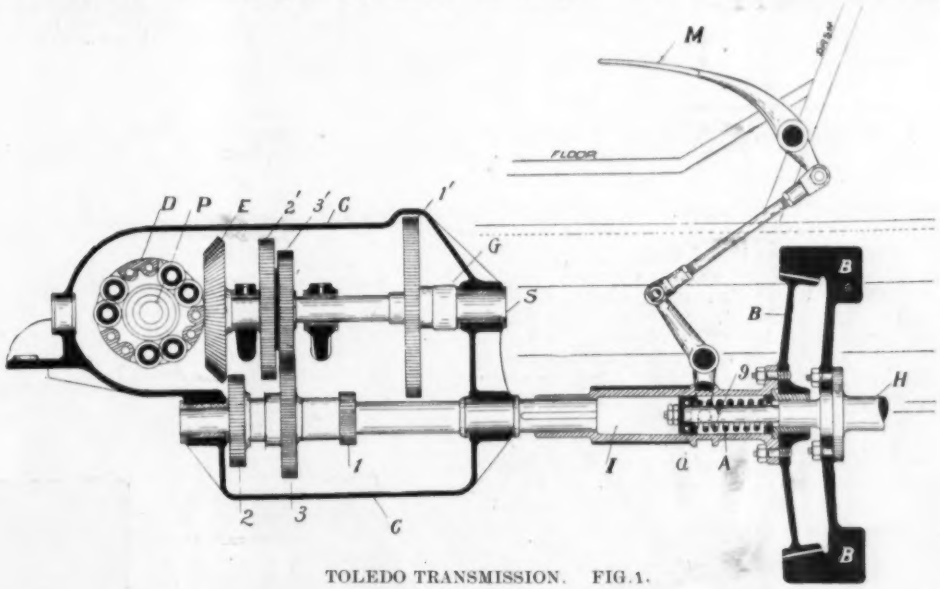
Midgley Manufacturing Co.
Columbus, Ohio.

K. Franklin Peterson,
165 Lake Street, Chicago,
Western Sales Office.

The transmission mechanism of the 16 horsepower gasoline touring car, manufactured by the International Motor Car. Co. of Toledo, is here illustrated. Fig. 1 illustrates a vertical section of the transmission, including the clutch and flywheel with the gears and clutch pedal shown in prospective. Fig. 2 illustrates the transmission mechanism with the upper half of the aluminum transmission case removed. In Fig. 1 the reverse gears are not shown, whereas they may be plainly seen in Fig. 2. While this transmission is of accepted sliding gear type, it possesses a number of interesting features that are worthy of special mention.

Referring to Fig. 1, H is the engine shaft which is elongated and carries at its extremity a ball thrust bearing against which the outer end of the clutch spring A presses, whereas the other end of this spring presses against the clutch member b, thus holding the clutch in driving relation to the flywheel member B. It will be readily seen that the object of this construction is to equalize the usual end thrust in the main bearings of the motor shaft. The tension of the clutch spring A is regulated by the nut and checknut at the extremity of the engine shaft; these nuts being accessible upon turning a movable sleeve exposing the angular space I into which a suitable wrench may be inserted. M is the clutch pedal and 9 the fork which actuates the movable clutch member b when the pressure of the foot is applied to the pedal M. The relation of the floor and carriage dash is shown in Fig. 2. The aluminum transmission case (Figs. 1 and 2) is marked C.

The primary shaft (Fig. 1) carries 3 pinions, Nos. 1, 2 and 3, while the secondary shaft S carries 3 gears, 1′, 2′ and 3′. When No. 1 pinion is in mesh with gear 1′ the vehicle is running on the first or slowest speed; when No. 2 pinion is in driving relation to gear 2′ the carriage is running on the second or intermediate speed, while a high speed is effected when pinion 3 is driving gear 3′, as shown in the illustration. The secondary shaft carries the driving bevel gear E, which is in constant mesh with the gear D, which is attached to the end of the differential D, thus driving the countershaft P (see Fig. 2). Ball thrust bearings G (Fig. 1) and G-G (Fig. 2) are fitted to reduce the usual end thrust. The pinions 1, 2 and 3, on the primary shaft are shifted by means of a yoke or fork suitably attached to the hand operating lever which fork engages in the groove between pinions 2 and 3 (Fig. 1).



TOLEDO TRANSMISSION. FIG. 1.

Referring to Fig. 2, C-C-C is the lower half of the transmission case; P is the countershaft; P′ one of the universal joints, of which there are two, to relieve undue stress in the countershaft bearings while the car is being driven. S is the secondary shaft; E the secondary shaft bevel gear driving a differential bevel gear D′; 1′ is the slow speed gear; 2′ is the intermediate speed gear and 3′ is the third or high-speed gear. The primary shaft pinions being below these gears are not shown. The reverse gears, R and R′, are mounted on a short separate shaft provided with suitable bearings below the secondary shaft S, and in front of the primary shaft. These gears are not shown in Fig. 1. The reverse is operated in the following manner: Moving the change speed hand lever to the reverse position when the first speed gears are in driving relation, shifts pinion 1 until it meshes with reverse gear R. A further movement of the reverse

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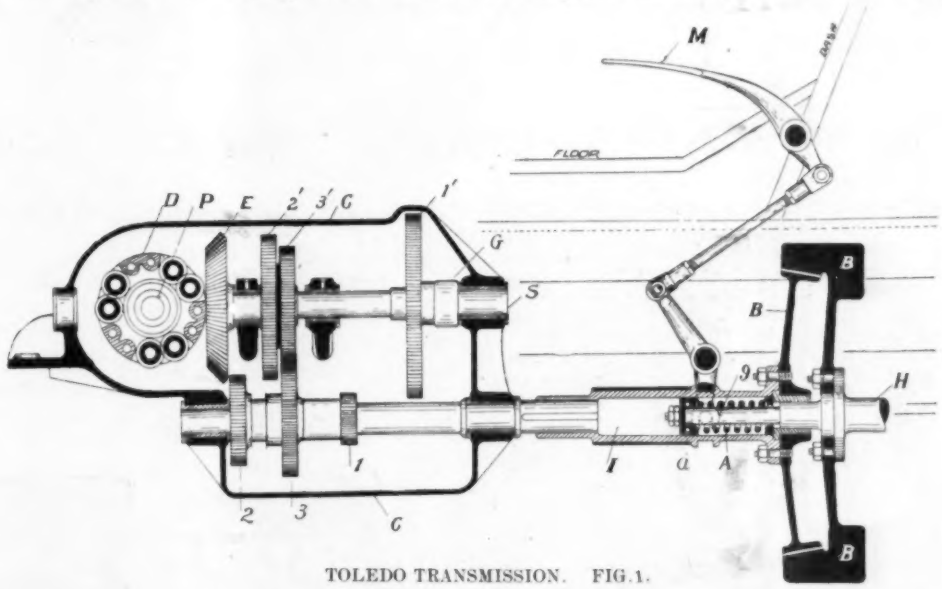
Referring to Fig. 1, H is the engine shaft which is elongated and carries at its extremity a ball thrust



TOLEDO TRANSMISSION. FIG.1.

bearing against which the outer end of the clutch spring A presses, whereas the other end of this spring presses against the clutch member b, thus holding the clutch in driving relation to the flywheel member B. It will be readily seen that the object of this construction is to equalize the usual end thrust in the main bearings of the motor shaft. The tension of the clutch spring A is regulated by the nut and checknut at the extremity of the engine shaft; these nuts being accessible upon turning a movable sleeve exposing the angular space I into which a suitable wrench may be inserted. M is the clutch pedal and 9 the fork which actuates the movable clutch member b when the pressure of the foot is applied to the pedal M. The relation of the floor and carriage dash is shown in Fig. 2. The aluminum transmission case (Figs. 1 and 2) is marked C.

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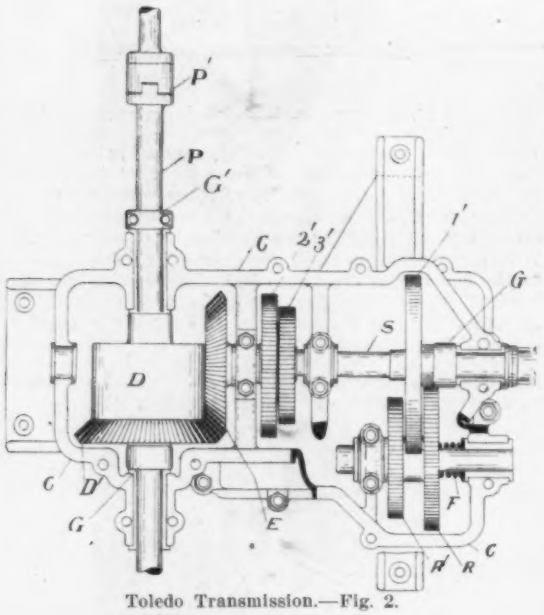
Referring to Fig. 2, C-C-C is the lower half of the transmission case; P is the countershaft; P′ one of the universal joints, of which there are two, to relieve undue stress in the countershaft bearings while the car is being driven. S is the secondary shaft; E the secondary shaft bevel gear driving a differential bevel gear D′; 1′ is the slow speed gear; 2′ is the intermediate speed gear and 3′ is the third or high-speed gear. The primary shaft pinions being below these gears are not shown. The reverse gears, R and R′, are mounted on a short separate shaft provided with suitable bearings below the secondary shaft S, and in front of the primary shaft. These gears are not shown in Fig. 1. The reverse is operated in the following manner: Moving the change speed hand lever to the reverse position when the first speed gears are in driving relation, shifts pinion 1 until it meshes with reverse gear R. A further movement of the reverse

lever causes both reverse gears R and R′ to move with the pinions of the primary shaft, the driving relation being maintained between pinion 1 and reverse gear R until the reverse gear R′ meshes with secondary shaft gear 1′. When the driving clutch is released the pinion 1 (Fig. 1) is in mesh with the reverse gear R (Fig. 2), and the reverse gear R′ is in mesh with the secondary



Toledo Transmission.—Fig. 2.

shaft gear 1′. The interposition of the reverse gears between the driving pinion 1 and the secondary shaft gear 1′ causes the secondary shaft to rotate in the opposite direction to its motion when directly driven by the primary shaft pinion 1.

When the speed lever is thrown forward in order to engage the first forward speed gears, the spring F (see Fig. 2) forces the reverse gears back into their original position, and they remain idle until again called into requisition by reversing the change speed lever.

All of the gears and pinions are cut from drop forged blanks made at the factory of the International Co. at Toledo. The teeth are beveled off to facilitate their proper meshing when it is desired to bring the different systems into driving relation. The differential D (Figs. 1 and 2) is of the spur gear type. The aluminum transmission case C (Figs. 1 and 2) is so arranged that the upper half of the case may be removed without disturbing any of the mechanism within, while a suitable covered observation opening is made in the upper half, removing the cover of which the condition of the gears, etc., may be readily seen. The movable clutch member b is cast of aluminum and leather faced. The clutch pedal connecting links and forks are all drop-forged and made in the most thorough manner. The transmission case is kept about half filled with a heavy lubricating oil, which insures perfect lubrication of the various parts, whereas the outside secondary and countershaft bearings are lubricated from the pressure lubricator attached to the dash of the car.

Plans for New York Show.

There is to be a new arrangement of the floor space for the coming automobile show at Madison Square Garden. Last year as one entered the Garden he faced five sections of exhibits separated by four aisles. This year there will be four sections and five aisles. The outside circle exhibits will have aisles back of them next to the gallery, instead of being set against it and approachable only from one side, as they were last year. The show literature has been issued. It is practically the same as before. The first allotment of space will be made on Sept. 22.

Exportation of Autos.

The following is a list of the countries to which United States manufacturers of automobiles and kindred lines have exported goods during the week just ended:

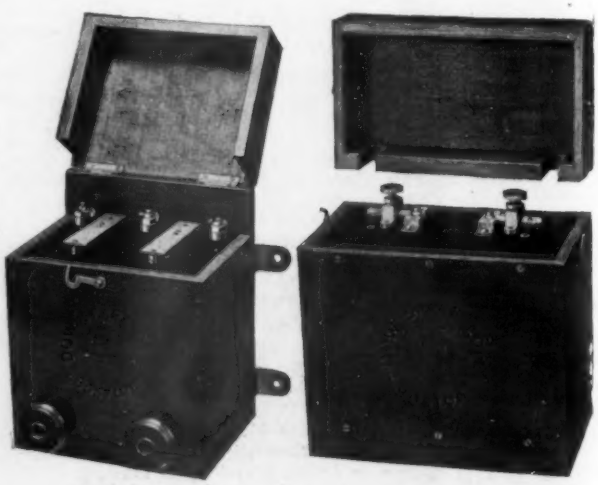
British East Indies—Motor vehicles and material, two packages, $550.
Australia—Auto vehicles, six packages, $2,790.
Copenhagen—Motor vehicles and parts, one case, $187.
London—Auto vehicles and parts, four cases, $2,000.
Mexico—Auto vehicles and material, ten packages, $2,139.

Dow Company Receives Large Foreign Order.

The two coils illustrated are manufactured by the Dow Portable Electric Co., of Boston, especially for export trade. The Dow company has received a large order from a French manufacturer, samples having been tested before the order was placed. Type A coil differs entirely from anything that has ever been used in America, of domestic manufacture. The vibrator has no adjustment and will work as long as battery power is supplied. This is a particularly powerful coil and is made up in single, double, triplex and quadruple style. The coil is intended to fasten to the dash-board. Type B is larger and more powerful, also intended to fasten to the dash board, with all terminal wires leading from the bottom of the coil. These do not show in the illustration. Fuller information may be obtained by applying for catalogues at any of the offices of the Dow company and samples may be examined at any of the branch offices.

Dasey Purchases Milwaukee Material.

The P. J. Dasey Co., 19 La Salle street, Chicago, has purchased and now has in store in Chicago, a large quantity of material owned by the Milwaukee Automobile Co. at the time of its failure, and now offers them at attractive prices, details of which may be found in the company's announcement in this issue. The Dasey



Dow Batteries, Styles A and B.

STANDARD

SINGLE TUBE TIRES

DOUBLE TUBE TIRES

"Born for Success with those qualities which win"

Hartford Tires AND Dunlop Tires

Have Stood Pre-eminently Foremost Since the Introduction of Pneumatic Tires

Few devices have been the subject of a greater inventive faculty or more persistent and successful exploitation, and few have reached such a high state of development.

They Never Vary in Quality or Workmanship Because They Cannot Be Made Better or of Better Materials

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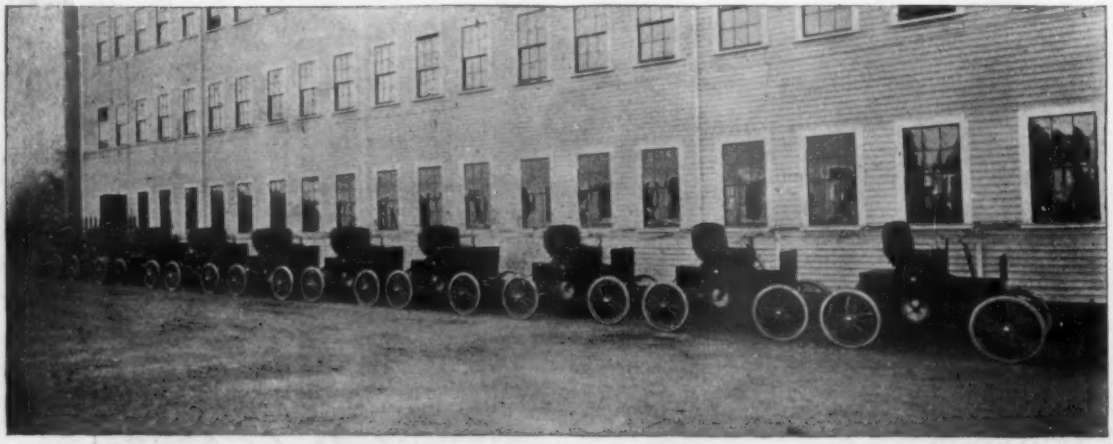


The above shows a row of Orient Runabouts just after they have been tested aud inspected, and are standing awaiting shipment. Several of these carriages developed a speed on the road in testing of over 35 miles per hour, and climbed grades exceeding 36 per cent, with full load. We have now several lots coming through our works and can make prompt shipment.

WRITE FOR CATALOGUE.

WALTHAM MFG. CO., - - - Waltham, Mass.

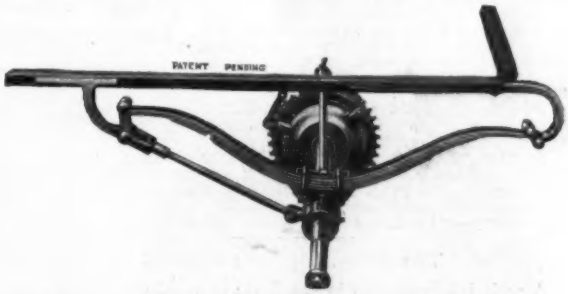
company has also issued circulars describing three styles of engines which it is ready to deliver.

Engine No. 1 has mechanically operated exhaust, suction intake, both valves being sufficiently large to fill the requirements at any speed. Bearings are ample in dimensions and of the best material. The shaft is forged. The cylinder and head are jacketed, the head being of an original design, to give the best results in admitting gas and exhausting and providing for high compression. The intake valve has flat bearing surface, ground to perfect fit, and is carried in separate case, the case being ground to fit the chamber in the head. All parts are made ground fit and packing is used only between the head and the cylinder, the surface being provided with shoulders turned up on the surfaces of the head and cylinder, each shoulder fitting into a depression on the opposite side. The transmission gear is planetary, two speeds forward and reverse, sufficiently heavy, and made of the best materials. The gears in the transmission are used only when on the low speed or reverse, the high speed clutch being used for locking the entire mechanism directly to the engine shaft. Thus the only reduction in gearing is that provided by the sprockets and chain. The reduction on the slow speed is three and one-half to one, and on the reverse four to one. The clutch bands are of bronze and carried on a strut back of the transmission. A coil spring is used under each band lug in order to provide adjustment to so hang the bands that when released they will not touch the surfaces of the transmission, thus allowing it to run perfectly free from friction so far as the bands are concerned. Each clutch band is operated by a forged lever, fulcrumed on the base frame of the engine, and the mechanicism is complete and ready for the attachment of the foot and hand levers with which the different speeds and brake are controlled. The levers are so provided that the break and reverse speed can be operated by foot levers while the low and high speed are operated by one lever as usual. Jump spark ignition of the most improved form is used, provision having been made for the varying of the time of ignition as required.

No. 2 is practically the same, except that it is not so handsomely finished. No. 3 is of a different design, but its general features are the same. The Dasey company will be glad to supply dimensions, prices and other details.

Combination Spring Hanger, Radius Rod and Shackle.

The illustration shows the combination spring hanger, radius rod and swing shackle offered by the Brecht Automobile Company, of St. Louis. The motive power may be fastened anywhere on the angle iron frame in front of the axle, with chains running from the sprocket on axle to the transmission of engine. The chain, which usually becomes slack and runs off the sprockets by the movement of the vehicle springs, is kept in proper tension at all times, over rough or smooth roads, with or without a load. The combination spring hanger and radius rod enables the use of semi-elliptic



springs, which allow the vehicle to be hung low, enhancing the appearance, and ensures easy riding and absolute safety. These radius rods are fastened on both sides of the gear and also act as a brace for the axle. The swing shackle in connection with the rod and hanger enables the spring to move free and easy.

Exportation of Cycles.

Washington, D. C., September 10.—The following is a list of exports of bicycles from New York for the week just ended:

Antwerp—Bicycle material, three packages, $151.

Amsterdam—Bicycle material, one package, $10; bicycles, two crates, $70.

Bremen—Bicycles, two crates, $80.

Berlin—Bicycles, one crate, $30; bicycles and material, one package, $25.

British East Indies—Bicycles and material, four packages, $127.

British Australia—Velocipedes, nine packages, $157; bicycles and material, twenty-nine packages, $1,137.

British Possessions in Africa—Bicycles and material, 135 packages, $3,318.

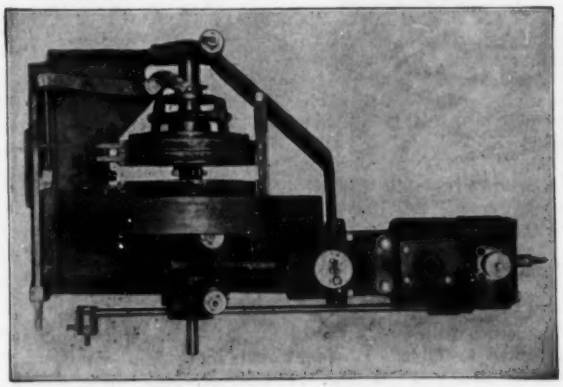
British West Indies—Bicycles and material, twelve packages, $483.

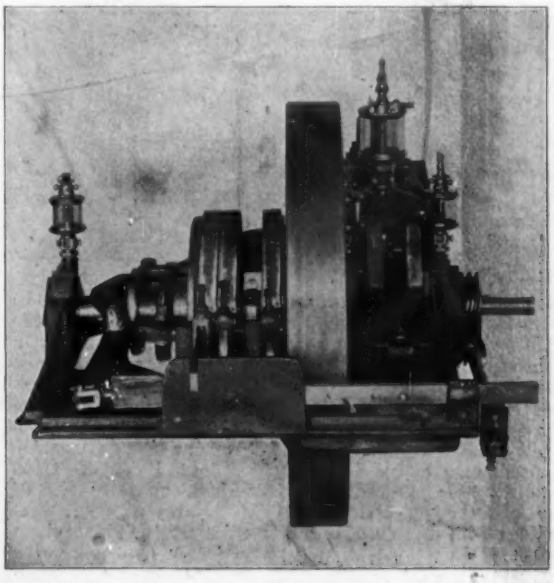
Brazil—Bicycle material, one package, $31.

Cuba—Bicycle material, one package, $23.

Copenhagen—Bicycles and parts of, seventy-one packages, $1,721.

Christiania—Bicycles, one package, $35.



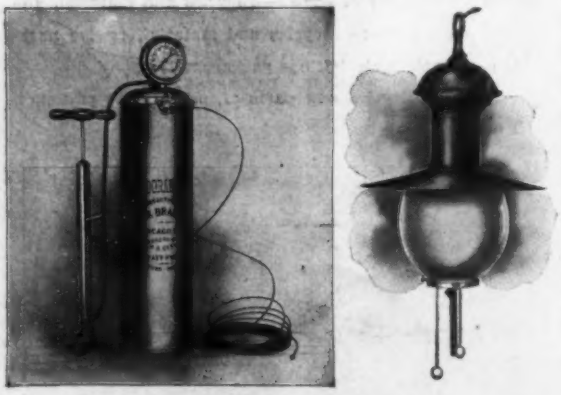


THE DASEY ENGINE AND TRANSMISSION.

Dutch East Indies—Bicycles and parts, eight cases, $879.
Glasgow—Bicycles, two packages, $50; tricycles, two packages, $60; bicycle material, two packages, $25.
Ghent—Motor cycle, one, $100.
Hamburg—Bicycles, one case, $35; bicycle material, twenty-one packages, $415.
Hayti—Bicycles, four cases, $40.
Havre—Bicycles and material, three packages, $1,715; bicycles and material, two packages, $32.
Liverpool—Bicycles, fifty-five packages, $1,926; bicycle material, four packages, $203.
London—Bicycles, seven packages, $185; material, twenty-five packages, $995.
Mexico—Bicycles, one package, $72.
Rotterdam—Bicycle material, twenty-four cases, $620; bicycles, fourteen packages, $150.
Southampton—Bicycle material, eight packages, $899.
Stockholm—Bicycles and parts, three cases, $113.
Strasburg—Bicycles and parts, one case, $35.
Trieste—Bicycles, three cases, $105.
Uruguay—Bicycle material, three cases, $336.

The Doran Lighting System.

A well lighted store is requisite in conducting a retail business, and it is interesting to conjecture what the financial consequences might be if the merchants of today were compelled to go back to such dimly lighted stores as prevailed a quarter of a century ago. The excessive cost of gas and electricity, however, and the fact that they are not available in the smaller towns has created a wide demand for some other means of illumination equal in clearness and brilliancy, yet more economical in cost. With this as the basis of its proposition the Acorn Brass Mfg. Co., of Chicago, calls attention to the Doran lighting system, which it has manufactured for nearly 10 years and of which thousands are in use. These lights are operated by gasoline, but it is claimed that the principles involved in their construction afford many points of superiority over other lighting systems of this same general class. Among other points may be mentioned the ingenious method by which the gasoline is fed in limited quantity, although constantly, to each light in the system



Doran Generator and Lamp.

by means of air pressure. The gasoline tank may be placed in any location desired, even outside of the building, and connection made with the lights by a fine seamless wire tubing. The latter may be put through crevices and concealed, as is an ordinary electric light wire. The generator in each light provides for the perfect combustion of the fine spray of gasoline ejected from the tube, and by means of an especially devised mantle an intensely brilliant light of 1,200 candle power is produced, more than equal to that of the ordinary electric arc light. Carrying the comparison still further, it is claimed that the light given by the Doran system is softer, whiter and more diffusive than electric arc light, and in addition is without the annoying glare and sputter with which all users of the latter are familiar. A saving of over 60 per cent is guaranteed in the cost of operating. Catalogues, price list and testimonials may be obtained by addressing the Acorn Brass Mfg. Co., Fulton street, Chicago.

Notes of the Industry.

The plant of the Steam Vehicle Co. of America, which manufactured the Reading at Reading, Pa., has been sold to the Meteor Engineering Co., a concern with capital stock of $85,000. The new company will continue the business under the direction of E. W. Alexander, president; J. Milton Miller, vice president; E. S. Youse, secretary and sales manager; D. P. Schlowt, treasurer, and I. D. Lengel, general manager. Associated with these gentlemen as directors are W. T. Hain, O. S. Geiger and M. D. Hunter. A new model will be added, to be known as the Meteor, a well selected name.

A sensational story was sent out from South Bend on the 10th to the effect that J. E. McDuffee, while repairing an automobile, had his left arm blown off. The fact is that McDuffee, who is a member of the Chicago club and is connected with the Friedman company, attempted without proper attention to details in advance, to start a machine for a stranger, and was struck by the crank, breaking one of the small bones of his left arm.

Elgin S. Brooks and Samuel Braedon, the latter of the Halsey Automobile Co., recently made a trip in a Rambler from St. Louis to Kenosha, Wis., their running time being 33 hours. Judged by the experience of people who have made the trip from St. Louis to Chicago, the performance was a good one and a splendid trial of the stability of the machine.

A Grand Rapids company is forming, in which Clark Sintz, the well known manufacturer of gasoline engines, is interested. It is reported that the capital will be $500,000, all of which has been subscribed. Charles Matheson, who is said to be the principal capitalist, and Louis C. Howard, who is to be sales manager, are also interested.

A. H. Overman, founder of the Overman Automobile Co., with which, however, he is not now connected, lately returned from England, bringing with him what is said to be a non-slipping tire, which, from the description given, is very similar to the Bailey tire made in Boston and recently sold to an English syndicate.

The papers at Loraine, O., report that the contract for the removal of the Peerless company's plant to that city has been signed. The price paid for the new factory is given as $40,000, and a local syndicate has agreed to dispose of the company's bonds to the amount of $80,000.

The Austin Automobile Co., of Grand Rapids, is making preparations to manufacture 50 machines. They are to weigh in the neighborhood of 1,700 pounds. The company would be glad to receive quotations on parts and supplies.

An automobile manufacturer, of course "operating one of the largest factories in the country," is trying to secure capital in Memphis, Tenn., and has interested the Industrial League of that city.

H. C. DeLoura, who has been attempting to manufacture automobiles at Des Moines, Iowa, will, it is said, remove to Perry, Iowa, the citizens being expected to raise a small amount of capital.

The Fournier-Searchmont company has decided to continue its business office at Philadelphia and is now installed at rooms 503 to 507 North American building.

The Standard Motive Power Co., of New York, has contracted to move to Canal Dover, Ohio, there to manufacture locomotives and automobiles.

The Henry Ford Co., of Detroit, has changed its name to the Cadillac Automobile Co.

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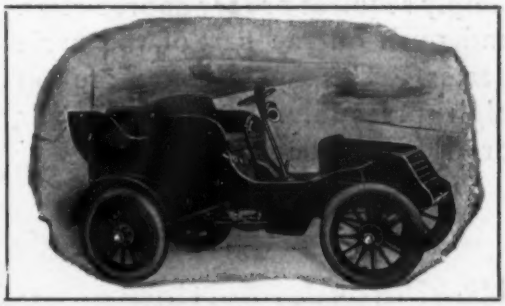

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WESTERN UNION BUILDING, CICAGO.

The Automobile Club of Great Britain held its annual motor cycle meeting at the Crystal Palace track on August 30, the attendance of spectators being highly satisfactory. The first event was a one-hour open event for motor cycles of all forms. It was won by J. Van Hooydonk (2¼-horsepower Phœnix), who made a new record of 42 miles 290 yards. This rider and E. H. Arnott (2¼-horsepower Werner) drew away from the field at the start. The latter fell 2 minutes before the expiration of the hour, but the winner was at that time far enough ahead to have the race at his mercy.

The classification of vehicles in the 5-mile handicap was a masterpiece. The event was "limited to motor bicycles with engines having a total capacity in which the diameter in mm. multiplied by the diameter in mm., multiplied by the stroke in mm., do not exceed 440,000, and motor tricycles in which the diameter in mm., multiplied by the diameter in mm., multiplied by the stroke in mm., do not exceed 576,000." The winner of each heat and the fastest loser competed in the final. The final was won by S. C. Holloway (1½-horsepower Minerva), who was given a start of half a mile over T. B. Andre (Mitchell), Cecil Edge (De Dion), Burt Yates (Humber) and J. J. Leonard (Werner). F. R. Wade, with a start of something over mile, was second and Van Hooydonk (440 yards) third. This race, as well as the 10-mile handicap which followed it, was a farce, Holloway winning by over seconds. The same rider won the 10-mile race. The result showed that it would have been necessary for the scratch man to have traveled at over 60 miles an hour to have won the event.

Marcus Hurley, Amateur Champion.

Hartford, Conn., Sept. 8.—Marcus L. Hurley, of the New York Athletic Club, won the amateur championship of America for the second time by defeating E. F. Root, the Bostonian, here tonight in the run off of the tie that resulted between them as the outcome of the recent amateur circuit. Hurley was ill during the original running of the championships and required but a point from a start to secure the title and break the tie of 18 points each. The champion was in his normal form tonight and was easily the superior of the New Englander. The race was run in heats of a quarter and a half a mile. In the first heat Hurley and Root bumped and the referee ordered the race run again. Hurley won by half a length in 31s. The New Yorker won the half mile and the championship easily in 1:19.

Vailsburg was to have seen the windup of the grand circuit on Saturday, but rain caused a postponement of a week. So far as the order of the three leaders is concerned, the national championship of 1902 has already been decided. Kramer, Taylor and Lawson finish one, two, three, just as they did last year. Kimble and Collett require another race to decide a tie for fourth place. Kramer is a far easier winner than last year, when the score stood: Kramer, 80; Taylor, 66; Lawson, 50; Fenn, 34; Fisher, 20. The major missed several meets at the opening of the series, just as he did this year, and Lawson did not join the circuit until it was well under way.

The contest between the champion and the major, who far outclassed all the others, has furnished the only interest to the battle. Taylor did not start on the circuit until Kramer had scored 30 points in five straight races. Since then the major has been absent from five meets. Kramer beat Taylor nine times and was beaten by him on four occasions. They ran a dead heat at Providence on August 27. Kramer won the match race with Taylor at Vailsburg, September 6.

There have been twenty-four grand circuit meets since the series started at Revere Beach on July 12. The national championships resulted as follows: Quarter mile, Vailsburg, August 23, Kramer; one-third mile, Providence, August 27, Kramer and Taylor, dead heat; half mile, New Haven, September 9, Fenn; 1 mile, Atlantic City, July 19, Kramer; 2 miles, Baltimore, August 15, Taylor; 5 miles, Buffalo, August 8, Kramer.

Fourteen men won points in the championship table by qualifying for the finals, as against fifteen last year. The standing of the men on the basis of 5 points for first, 3 for second, 2 for third and 1 for fourth, with double points for national championships, follow:

	1st.	2d.	3d.	4th.	Points
1. F. L. Kramer	18*	4	1	0	128
2. Major Taylor	5	6	1	1	57
3. Iver Lawson	1	6	4	4	38
4. O. S. Kimble	0	4	3	4	28
4. G. H. Collett	0	4	6	3	28
6. W. S. Fenn	1	0	1	4	17
7. J. T. Fisher	0	1	3	1	12
8. O. L. Stevens	0	0	2	1	8
9. John Bedell	0	0	1	1	4
10. J. B. Bowler	0	0	0	2	3
10. Lester Wilson	0	0	1	1	3
12. E. C. Bald	0	0	1	0	2
13. G. C. Schreiber	0	0	0	1	1
13. J. P. Jacobson	0	0	0	1	1

*Including dead heat with divided points at Providence August 27.

Chicago House Opening English Branch.

Liverpool, England, Sep. 4.—Editor MOTOR AGE: A few weeks ago, happening to be on a stroll near the docks, I noticed the unloading of hundreds of bicycles from New York. I inquired on what occasion such a large shipment—about 1,000 machine—could be sent over, and gathered that a Chicago mail order house which had been doing a satisfactory business during the past 18 months through advertising in daily and weekly papers, had decided to open a branch in this town. British manufacturers will not see the arrival with satisfaction. I have friends who are riding machines sent by this concern and they seem satisfied. It seems that you people have at last come to the conclusion to furnish a better class of goods than that they sent some years ago. But they do not furnish what we want

in every sense. Their stubbornness in wanting to send single tube tires, or cemented tires is entirely to their disadvantage. We don't want them. Clincher tires are the go, just like the free wheel. If the machines are equipped with such they will find a ready market if within reasonable price.

I have noticed that the exports of American bicycles to this country have decreased and I think this could be remedied if your manufacturers would take a little more pains, not simply by studying the wants and requirements of our people but by giving them what they want. Too often a concern will send a representative to a foreign country to study the requirements, but will not follow this by making the articles according to the demand. This is wrong and no one better than the Germans have been able to find it out. Years ago they, too, thought that all they had to do to get foreign trade was to sell what they sell to their own countrymen. When, after much expense and effort, they did not get the expected results they looked seriously into the matter, sending representatives and, having gathered information as to the requirements, they did not hesitate to improve their wares according to the foreigners' requirements and the result is that the German export trade has become simply tremendous and is all the time on the increase.—Yours, etc., A. G. B.

Clever Innovations at Vailsburg.

Newark, N. J., Sept. 15.—Much of the continued interest in the bicycle races at Vailsburg has been due to Manager Voigt's constant presentation of novelties to vary the possible monotony of continual contests. Six thousand spectators yesterday greeted with enthusiastic approval two clever innovations. That for amateurs was the more striking, the professional novelty being rather an extension of the lap prize scheme already popular. The amateurs were sent away in a bunch and given a rolling start. After they were off the referee drew from a hat a sealed envelope, which contained a statement of the distance to be ridden. The envelopes held a great variety of distances up to 10 miles. As the men approached the beginning of the lap which was to complete the distance a warning pistol was fired. To keep the men going a lap prize was also offered. It will be seen that every contestant had to constantly maintain a favorable position near the front ready for the signal to race, and that all hands, both spectators and riders, were kept in suspense to the end.

Four miles happened to be the distance drawn yesterday. Beyerman was in the lead at the gun and Lindley, of Bridgeport, next to him, with Hurley and Gearson well back in the ruck. The last named three jumped in a jiffy. Beyerman was soon caught. Hurley and Gearson rode a grand race and caught Lindley at the last turn, Hurley winning by a half length in 9:03 3-5, with Lindley third. The race was called "an unlimited distance race" by its inventor.

The prizes in the 5-mile lap race for professionals were split up as follows: Two dollars for intermediate laps; $25, $10 and $3 to first, second and third at intermediate miles, and $50, $25 and $10 at the finish to keep the good men in. The race resulted in a fierce fight from start to finish and a record, 10:49 3-5, for an open race, as against Fenn's 10:15 handicap record. There were thirty-seven starters. The order at the miles was: First, Fenn, Collett, Bowler; second, Floyd Krebs, Lawson, Wilson; third, John Bedell, McFarland, Kimble; fourth, Martin, Jacobson, Menus Bedell.

Kramer, who was paired with McFarland, got a position in the preliminary lap of the rolling start. Martin, who returns with Beauchamp to Australia this week, had a bad fall in the last mile and was considerably cut about the face. Fenn carried McFarland on his wheel the whole of the last lap and beat him a length and a half at the finish, with Tom Butler third.

There was "flagging" in the final half-mile professional handicap and Walter Baudpt (50) won in 59 3-5, with Fisher (20) second, Stevens (40) third and Floyd Krebs (35) fourth. D. J. Quille (80) won the mile amateur handicap by a half a length in 2:01 2-5, with Hurley (scratch) second, Haggerty, of Bridgeport, (60) third and Billington (scratch) fourth.

Huret Hurt and Will Probably Retire.

Another serious accident happened during the training hours at the Pare des Princes track in Paris on Sept. 4. Michael, Bouhours, Huret and Contenet were training. On one of the turns Huret, who was being paced at a speed of about 40 miles an hour, punctured his rear tire and was thrown from his bicycle. He rolled down the steep turn without injury, but Michael, paced by Fournier, was coming on at a 45 mile speed. Fournier in some providential way avoided Huret. Michael was not as lucky. Almost like the Michael-Nelson spill in New York, Huret's leg was caught in Michael's bicycle and his knee cap was broken while the calf of his leg was badly mutilated. The French rider remained unconscious and was taken to a hospital. Little Jimmy was lucky, as he jumped from his bicycle in the nick of time. It is probable that this accident will close the career of the former long distance champion of the world.

Sherman and the Great Western Consolidated.

The Great Western Mfg. Co., of La Porte, Ind., formed three years ago by a combination of the cycle departments of Adams & Westlake, the America Cycle Co. and John Lawn & Sons, is to be enlarged by the addition of the Sherman Cycle Co., of Chicago, which absorbed the plant and good will of the Manson company. The Great Western therefore becomes a combination of five factories. The Sherman company has conducted a comparatively small but satisfactory business all through the troubles which have beset the industry during the last three years.

Kramer Defeated by Fenn.

New Haven, Conn., Sept. 9.—Kramer was beaten tonight by Fenn for the national half-mile championship. Kramer led until the last lap, but was beaten by the Connecticut flyer in 1:02 by a half a length in the rush to the tape, with Everett third and Lawson fourth. Taylor failed to appear. McFarland won the 10-mile race in 23:03 4-5, with Bowler second, Schreiber third and Kramer fourth. Rutz won the consolation mile in 2:03, with Beauchamp second and Fisher third.

The people of Westfield, Mass., are again worried about the factory which they equipped for the Lozier company, and which was afterwards transferred to the American Bicycle Co. The terms under which the factory was built, was that 500 hands should be employed for a period of years. The agreement has still three years to run, and in case it is not carried out the property reverts to the contributors to the fund. In view of the fact that the manufacture of the Tribune has lately been added, there is no reason to suppose that any changes are contemplated.

The New York Motor Cycle Club has decided to hold a hill climbing contest on Thanksgiving day. The Lafayette boulevard hill, which was the scene of the Metropole Cycling Club's hill climb last spring, will probably be the course used.

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FOR IMMEDIATE DELIVERY

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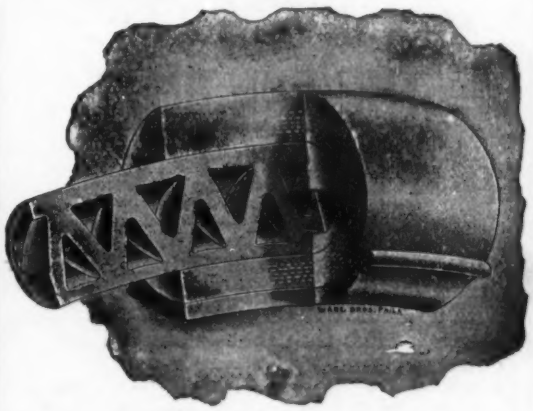

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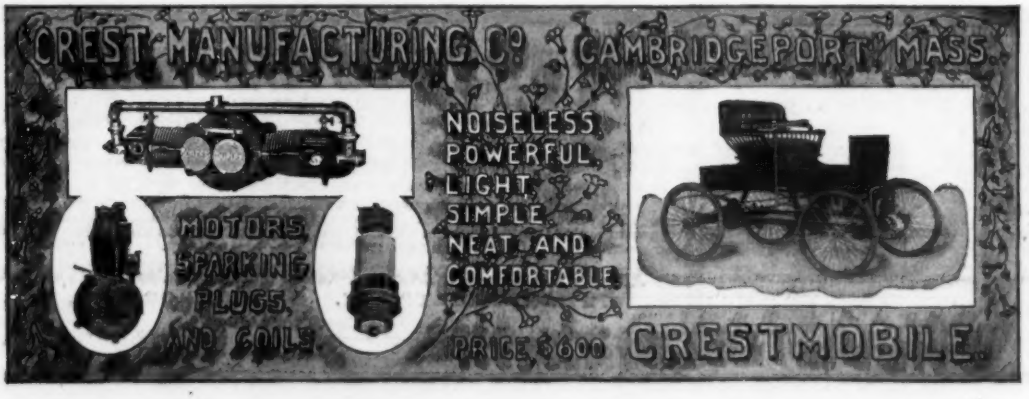

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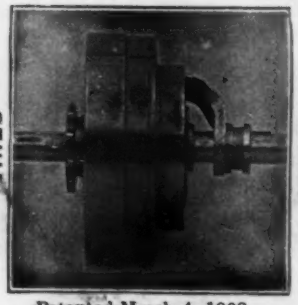

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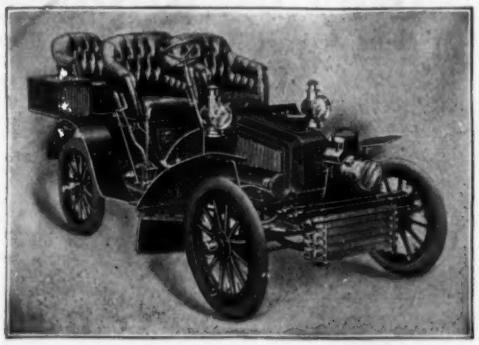

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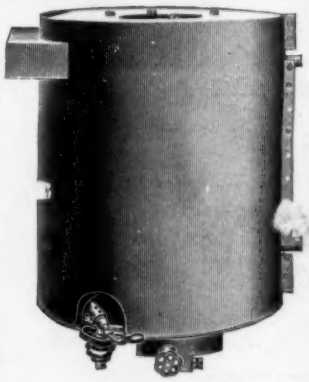

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and we are the oldest makers of motor cars in the United States. No improvements held back till "next season."

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SURREY, 9 horse power, 4 passengers,				$1,800
PHAETON, 9 "	"	2	"	1,500
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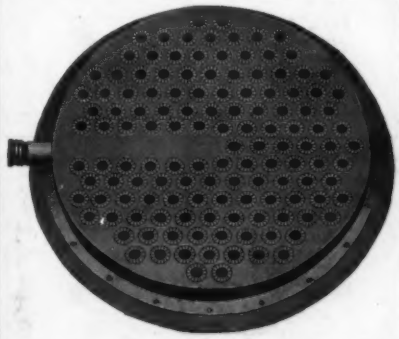
Faith in one's own product is one of the secrets of success in marketing. We have unqualified faith in THE WOODWARD BURNER. :: It has a record of **Fifteen Miles on One Gallon of Gasoline.** :: Its construction is scientific. Its top plate is flexible and Tubes screw in bottom plate, and if for any cause Tubes have to be removed all that is necessary is a wrench. It makes no carbon. It cannot backfire—absolutely impossible. It makes steam so that even on hills you have enough and to spare. Its flame is blue and twelve inches long, which means that it gives more heat than other burners. It is durable—will last as long as any other part of the vehicle. We guarantee this. :: For proof of any and all claims here made we refer to the boiler itself. :: It will prove them to your satisfaction if you will give it a trial.



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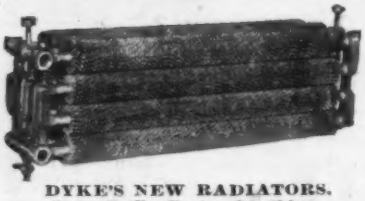

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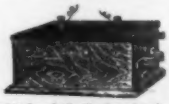

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This was the first Reachless Gear, therefore all others are imitations. We sell the gear complete or in parts.

Dyke Plugs fit any make of machine.

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THE "WORM'S EYE" VIEW

of an automobile is not beautiful. It is seldom pleasant, and with a

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never necessary. The synonyms for Rambler are

RELIABILITY
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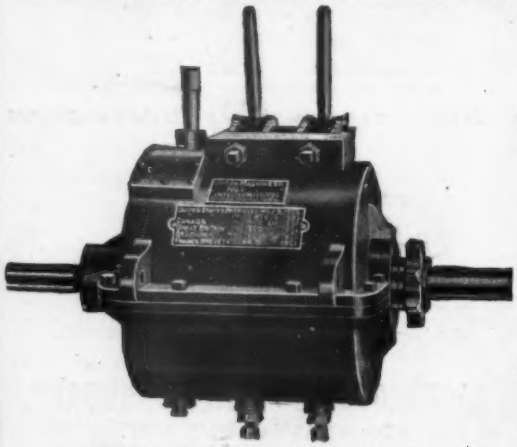

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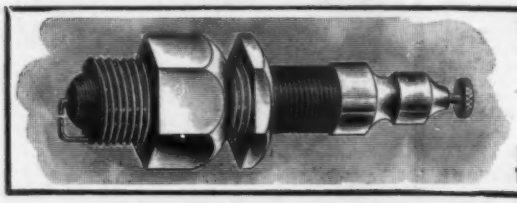

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on an automobile either increase or retard its speed. Resilient tires give additional power and greater mileage.

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have been proven the speediest of all vehicle tires, and they wear longest. Descriptive Catalog and full information on request.

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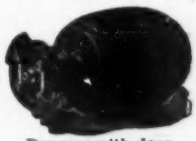
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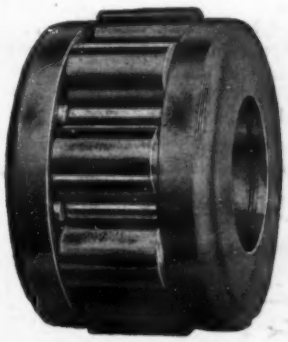

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Durable, Graceful, Guaranteed.

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OUR REACHLESS RUNNING GEAR

New Features not shown in imitations.

Made in all sizes,

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Victor Steam Carriage

Reliable Automatic Features
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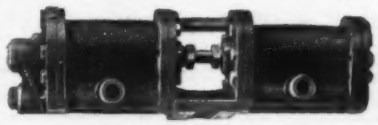
THE VICTOR STEAM PUMPS.



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Price, $30 Each.

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FOR SALE.—Milwaukee Stanhope, solid seat, full leather buggy top, Brown-Lipe differential, pilot light oil cups on engine, newly painted, tires like new; a big bargain at the price, $350. Milwaukee Light Delivery, one of the best rigs for the service ever made; price, $1,200; write for particulars. Address Steam Vehicle, care MOTOR AGE.

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WANTED.—Salesman calling on the automobile and gasoline engine trade to handle high grade carbureter as side line on commission. Address, with particulars, "B," care MOTOR AGE.

FOR SALE—Cheap—Dynamos and Motors, standard makes, all guaranteed; reliable repair work. Schureman & Hayden, 139 S. Clinton street, Chicago. Telephone 1648 Main. tf

FOR SALE—Electric delivery wagon, good condition, at very low price. SCHUERMAN & HAYDEN, 137-137-139 S. Clinton St., Chicago.

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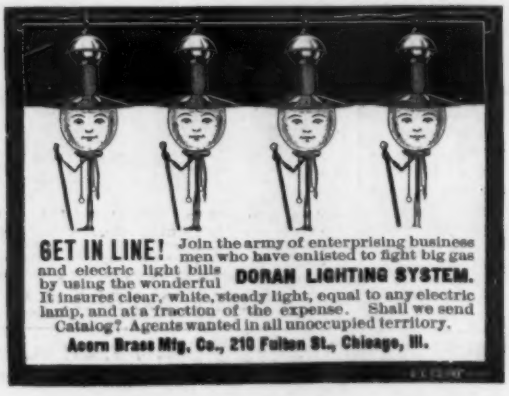

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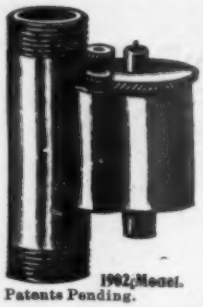

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Patents Pending.

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If you have a gasoline engine that troubles you, or a gas engine that you wish to convert into a gasoline engine you need this Carbureter, the only reliable system for automobile or bicycle motors. Will stand any amount of vibration, is noiseless, light; no valves in motion when once adjusted to an engine; never needs to be shut off or changed.

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35,000 IN USE.

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To Owners of Gasoline Engines, Automobiles, Launches, Etc.

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does away entirely with all starting and running batteries, their annoyance and expense. No belt—no switch—no batteries. Can be attached to any engine now using batteries. Fully guaranteed; write for descriptive catalog.

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ELECTRIC CHARGING PLANTS
For AUTOMOBILES and LAUNCHES
"SELF STARTING"
Write us for prices etc.
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Manufacturers of Single 4 H. P., Double 7 H. P., Four Cylinder 16 H. P. Gasoline, Automobile or Marine, 4 cycle Motors, Either Horizontal or Vertical. Fully Guaranteed. Prices the lowest.
Your patronage is solicited.

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6 H. P. Gasoline Runabout
Long Wheel Base. Reachless Running Gear.
A Good Hill Climber.
Immediate Delivery. Write for Catalogue and Terms.
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INDISPENSABLE For Starting Fire on STEAM AUTOMOBILES.
No preliminary heating; starts a gasoline burner instantaneously with a match, like a gas burner. Safe, quick and clean. **A postal card will tell you all about it.**
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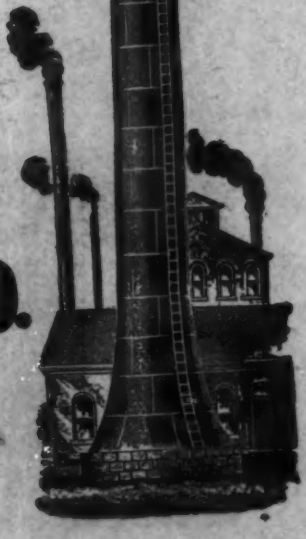
Solid and Pneumatic



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KOKOMO,
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Figuring the Profits

As the season draws to a close have you any

Profits to Figure?

Were you one of the wise dealers who bought good bicycles and, aided by their reputation, made money on them?
If not, do better hereafter. You are in the minority.
Ask some member of the great majority of dealers—all of our agents have made money this season—and he will advise you to select from this line of machines:

Columbia, Crescent, Cleveland,
Monarch, Tribune, Rambler,
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We can give you Motor Bicycles of unquestioned speed, economy and durability. Hygienic Cushion Frames, Regas Spring Frames.

There is yet time to sell a lot of them.

American Cycle Mfg. Co.

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